





## COMPUTER WEEKLY

Vol. 28, No 867  
Thursday, June 14, 1979

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Published weekly on Thursdays

Registered at the Post Office as a  
newspaper. Postage paid by  
IPC Business Press Ltd 1979.

**CIRCULATION INQUIRIES**  
Requested Readership: 01-837  
3636  
Subscriptions: 0444 59188.

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Computer Weekly has a circulation each  
week of over 82,000 including the high-  
est fully requested circulation in the UK.  
The International edition, which is  
published 10 times a year has a circula-  
tion of over 14,000.

Computer Weekly is not free of charge to the  
following categories in the UK and Eire only:  
Company directors, company secretaries,  
management services executives, civil en-  
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Controlled Circulation Department: IPC Busi-  
ness Press (Sales & Distribution) Ltd, 40  
Bridges Avenue, London E20 6JH and 12  
01-437 3000. Subscriptions for readers outside  
the above categories: one year, UK (Eire):  
overseas £20, USA, Canada \$25. All rates on  
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ISSN 0010-4787

## CENTRAL OFFICE OF INFORMATION

Central Film Library, Acton, London W3

The Central Office of Information is planning to computerise the  
booking and accounting function of the Central Film Library.

## A TURNKEY SYSTEM

is required to provide both on-line and batch facilities.  
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## COMPUTERVIEW

Too soon to talk  
of worklessness

The flow continues unabated of analyses of what mankind is going to do to while away the time when chips have taken over all our work. Clive Jenkins and Barrie Sherman with their book *The Collapse of Work* (CW, May 31) are only the latest in a burgeoning crowd of public figures including the new Employment Secretary James Prior who are prophesying the death of "the Protestant work ethic" and the coming of a Leisure Society. In the light of this, it is an interesting mental exercise to try to visualise just how and when this will come about. This can easily lead to a feeling that perhaps the death knells for work are premature.

We imagine a life that for 90% of the people consists entirely of leisure. We get up in the morning, and there is nothing that has to be done. But life today is totally unlike that. There are indeed 1 1/2 million unemployed in the UK, but for most of the other 48 1/2 million there is no shortage of things that have to be done. A large proportion of those who have jobs feel themselves over-worked, and when they get home in the evenings there is still plenty of work around the house for them to do, to say nothing of looking after children and grandparents and so on. The much-vaunted Leisure Society that we supposedly already have in part seems quite unreal to them.

Then we consider the propo-  
sition that when chips have

taken over most manufacturing and routine information handling, there will be little employment-type work left. But again, think of the last time you tried to get something done. Take for example getting your car fixed, or your record player fixed, or your plumbing or your back back seen to. How often were you told, "Oh dear, no, we won't be able to do that till the week after next - terrible backlog of work?" How often in the face of that figure of 1 1/2 million are we still regretfully informed of staff shortages? How often when work is done is it done badly?

We are left with the inescapable conclusion that there continues to be a vast amount of work to be done in the world, an ever-increasing proportion of it service work. At home we need to improve substandard housing, look after the aged and infirm, and provide countless services to the population at large which cannot be done by automation. Overseas, there are two billion people with abysmally low standards of living who could consume all of the

goods and services we could produce, if in our new Utopia we chose to work rather than sit around doing nothing. Even the micro leaves plenty to be done by old-fashioned flesh and blood. A car with a diagnostic system will still need a mechanic to undo the rusted nuts and change the gaskets. Linda Blandford, writing in the *Guardian* about the persisting shortage in gadget-ridden America of domestic workers, points out, "Someone has to clean the electric pasta maker. Someone has to polish the microwave oven." A Woody Allen type robot that can man-handle the sofa and the Melissen with equal skill is an awfully long way off.

The last Employment Secretary, Albert Booth, has affirmed that it is simply too early for us to know what the employment effects of the micro will be (CW, April 5). He pointed out that in some areas such as banking and insurance where it was expected there would already be a drop in employment due to computers, this has not materialised. Thus it is very difficult to pic-

ture in one's mind that hypothetical future moment when that great bulk of "things that must be done" ceases to exist. What will certainly come is an ever-increasing need for people, not to have no jobs, but to change jobs. For this, training must be made more readily available, and moving home must be made easier (computers can help with both of these). But first and foremost people must be more ready in themselves to change, and to accept (as members of the National Graphical Association refuse to) that if society no longer needs the work you are doing you have to do something else. There is no question of keeping people doing something that is useless simply because of the difficulties of dealing with the social consequences of doing otherwise; it is better to pay them to do nothing.

Here there is a marked division in attitudes in society. There are those who feel the State should provide them throughout their lives with whatever jobs they picked on leaving school. There are others to whom it seems obvious that if they cannot get a job they want, they will have to take one that they do not want. This difference is exacerbated by class conflict, and any resolution of it must be accompanied by acceptance on everyone's part that no necessary job, however dirty or menial, is beneath them.

one who left one week after the contract was signed) by the DP manager.

Similar installation wishful-thinking may well emerge from time to time in respect of Post Office engineers, printer stationery suppliers and, no doubt, from the rest of the team for the DPM himself.

Apart from state installations, DP specialists work within the constraints and guidelines presented by their employers.

Naturally, pressure is exerted by DP management for more resources, but so do production and transport managers and the sales director.

In no way, it seems, can DP management win. If they exercise pressure, they are accused of strangleholds. If they adopt a more docile approach, they are then labelled New Luddites.

Much of the basis of these charges has stemmed, as do so many other challenges, from the advent of the microcomputer.

The article to which I have referred makes a firm recommendation for line management of all varieties to go it alone in their pursuit of DP independence. Just who is going to mastermind all these first-time users is not revealed.

DP managers suspect that it could well be the much deni-

grated DP specialist who will have to rally to the support of the company.

However, DP management has been given a welcome dose of encouragement. Speaking at an IDPM meeting in London, the UK sales manager of Amdahl, Terry Pasola, said that while it might be the case that the prospects for the medium-sized installation were not bright, this was certainly not the case where large and very large-scale computers are involved.

The marketplace for large scale computing was expanding fast, a fact of DP life confirmed by the recently published results of such organisations as Magnuson, Storage Technology and Adair.

Far from being a disruptive force in the natural scales of computing, Pasola suggested that the microprocessor was a positive ally.

"Thinking Big" is the only way to co-ordinate the activities of all the distributed processing systems within the company. This is equally the case with the micro.

While information handling requirements are arriving large shaped, large scale computing costs are coming in reduced size. Technology, it seems, is on the side of the company accountant.

Ten  
years  
ago...COMPUTER WEEKLY  
JUNE 12, 1969

STC at Southgate, North London signed a contract for the first Honeywell 4200 in Europe. The £500,000 system was to form the basis of a management control system... Lord Hailbury was elected president of the BCS with Alan d'Agostini as vice-president... A ship floor data collection system was ordered from Feedback of Croydon, Surrey by BEA for use at its Heathrow engineering base. The system was to feed data on engine overhauls to the airline's ICL 1903... Progress matics filed an anti-trust suit against IBM, the fifth of the company had received that year... A Regneconcentral RC 4000 system worth £10,000 was ordered by the Danish Meteorological Institute to help it forecast the weather.

VDU hazards  
considered

RECENTLY developed methods for eliminating VDU eyestrain and other VDU-related disorders will be explained at a seminar to be held at the Napier College of Commerce and Technology in Edinburgh by the Scottish Ergonomics Group on September 26.

The conference is entitled VDU Eyestrain and Low Back Pain, and the results and implementation of their research will be presented by four speakers, including Tom Stewart, an ergonomist with management consultants Butler Cox and Partners (50 St. February 1).

Enterprise  
rewarded

FOURTEEN-YEAR-OLD Duncan Willis of Fleet, Hampshire, having built his own computer at home for £28 using a Motorola 6800 chip, went to Ramtek at Chesham to find a suitable TV monitor. The firm was so impressed by his enterprise that it gave him a monitor free. In our picture Duncan is being shown a VDU under development by B&D director Arthur Combs.

Services'  
growth  
is healthy

THE computer services business continued to grow at a healthy pace through 1978, according to the latest statistics from the Department of Industry, which cover the whole year and show an overall growth of more than 25% from £265 million in 1977 to £330 million last year.

Billings by computer service companies to outside clients, as opposed to parent or associate organisations, increased by more than 20%, from £186 million to £241 million. Business from interactive time hire services more than doubled, from less than £9 million in 1977 to more than £18 million last year. Overseas business rose more than 37%, from £13.5 million to £18.5 million, with consultancy services showing a growth of nearly 50%, reaching a total of £3.1 million in 1978.

GEC engineers'  
status leads  
to confusion

AS pay talks continue between GEC management and unions in Coventry (CW, May 31), some confusion has arisen over the status of 67 commissioning engineers who were initially suspended by the company for not working normally.

The company last week issued a letter saying that detailed pay talks relating to all employees could not proceed until the 67 men returned to work, something which a GEC spokesman said they were refusing to do.

According to a spokesman for the Association of Scientific, Technical and Managerial Staff, however, the men have offered to go back to work on two occasions.

"At first the men said they would go back to work, but would not attend any of the System X courses arranged for them," said the ASTMS spokesman, "but they then lifted this condition and instead said they would attend the courses on the proviso that the company would move ahead in considering their pay claim. There has been no response from the company."

Pensions, payroll  
and personnel

A PARAMETER-DRIVEN package combining pensions, payroll, and personnel processing in a single system has been developed by Data Vision, a London-based software house. Called Man-Manager, the package is written in Ansel Cobol and is available for most popular mainframes.

## PO pay offer now official

WITH the telephone billing backlog over the £400 million mark, and the organisation of Post Office engineering stores in danger, the corporation has issued a recent proposal of a 10% pay rise to its 100,000 employees.

Inmos 'rethink' by  
new government

A GOVERNMENT Minister's "thinking aloud" last week gave an oblique hint that greater private investment in National Enterprise Board companies such as Inmos is going to be the line of the new government.

Speaking in Newcastle upon Tyne, Lord Trenchard, the Industry Minister with responsibility for regional policy, singled out Inmos from the NEB's stable of high technology companies as one that "was being reconsidered".

Hinting strongly at future private investment being encouraged, he said it was "more important to harness all Britain's technical and commercial expertise for a sector where the Americans were ahead, than for the government to run the project".

A Department of Industry spokesman said last week that Lord Trenchard was to some extent "thinking aloud". All DoI policies are at present under review, the official said, adding that at the moment all options were still open.

The Tories have committed themselves to a close scrutiny of the NEB and its functions and power, in the Queen's Speech. Decisions resulting from the policy review are expected in the fairly near future.

One factor in Inmos' favour that emerged from Lord Trenchard's speech was that areas of high unemployment would not suffer under any outcome of the policy review.

Inmos is almost certain to site its first UK production facility in a development area.

## Biggest Prime in Europe

THE largest Prime system in Europe is to be installed at the University of Surrey, where three 750 high-powered minis will replace two ICL 1805 mainframes. The four computers

together with Primenet node controllers will form a network to support 80 online terminals and three RJE links for connection to the university regional computers. Five Megabytes of main memory will be available.

**THE LSI-11/23 SEMINAR**

THE seminar is intended for engineers and managers who require a complete insight into the LSI-11/23, both from a hardware and a software point of view. Papers will be presented by the Digital Equipment Corporation and Rapid Recall.

**ABOUT THE LSI-11/23**

The LSI-11/23 has been developed from the famous PDP-11 family of microcomputers and replaces the LSI-11/2 as the most powerful microcomputer in the DEC range. The LSI-11/23 is as powerful as the PDP-11/34, yet it is contained on the same size board (2 wide) as the LSI-11/2. The LSI 11/23 is 100% software and hardware compatible with the LSI-11/2 and can be plugged in place of an LSI-11/2 in any system to provide a massive increase in performance.

**there's one near you..don't miss it**

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## 1984 and all that...

A PRIZE of £5 is awarded for each contribution from a reader to our column of the strange things people say in the media about computers.

Some silicon chips have the same capacity as 100,000 transistors. And to give you an idea of that... your television has about 40 transistors, and we all know how bulky a TV set is.

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## Downtime

by Chat

## Shall we join the ladies?

DURING the 1920s, Punch ran a series of cartoons under the title "Functions at which we have never assisted," which featured things like the ceremonial "dumping" of the past president at the annual meeting of the BCS. (I reproduce a modern sample of the genre below.)

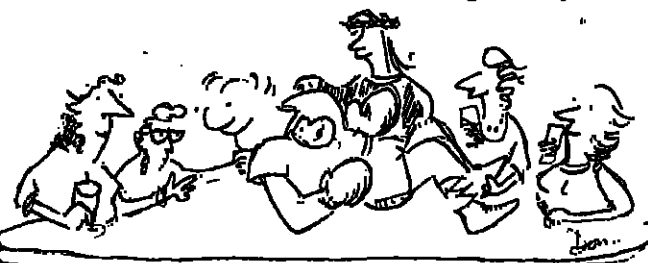
I imagine it is self-evident that among the functions at which I have never assisted is the annual Burroughs Lunch for Lady Journalists.

Computer Weekly was represented this year by a young lady who, I am pleased to report, does not regard it as an insult when people acknowledge that she is a woman.

She reports that once behind closed doors our female colleagues are apt to let their proverbial hair down and

that the function becomes decidedly boisterous at times. Burroughs was represented mainly by men, who indulged in plenty of verbal head-patting of the "now we're not here to worry your pretty little heads about computers" kind.

She also says that they try to play both ends against the middle by passing the cigars at the end of the meal (yes, she took one), but it seems to me that Burroughs must take extraordinary care over its guest list. In my experience there are some pretty formidable (pretty, formidable if you like) ladies working for the computer Press and if some of them got wind of the event next year there might just be another of those functions at which we have never assisted, namely "Bra-burning at Searcy's."



Functions at which we have never assisted: Passing the Punchgirl at the Annual Dinner...

## Factors and facts

USUALLY when people get their gee-whiz data all wrong about the amazing power of computers, they overstate our wonderful machines' capabilities. Cf Clement Freud MP "One of these chips equals, 'Oho, I don't know how many hundred people!'" (CW, January 4).

The Wall Street Journal, however, in reporting the astounding new development in Josephson Junctions which switch in 13 picoseconds, attempted to give a bemused public some idea

what a picosecond is by explaining, "Roughly, a picosecond is to a second what a second is to 30 years."

Pretty mind-blowing, isn't it? However, suspicious character that I am, I got the lads to check it out and lo, the WSJ is out by a factor of a thousand. It should be not 30 but 30,000 years. So much for numeracy. Long live old-fashioned non-electronic arithmetic teaching.

Still, then there Josephson Junctions don't hang about. Makes you think, dunnil?

## The smell of chips

THE researchers who have been hired by the Equal Opportunities Commission to find out how many women will be put out of work by microchips (Downtime, April 5) have swung into action.

They are interviewing various secretaries around London to find out about their jobs, and every girl who takes part is given a bottle of perfume. An incentive, I suppose?

## Product Bank is first fruits of Insac's plans, says Pearce

AT the end of Insac's first full year of operation its joint projects with member firms are already beginning to bear fruit. So said managing director John Pearce in introducing the annual report of the NEB's software marketing consortium.

Pearce outlined how Insac's initial five-year strategy had been modified during 1978 to the current two-path approach.

## French eye on CII-HB

HAVING firmed up its deal to put together a joint company to manufacture semiconductor components with National Semiconductor (CW, December 7, 1978) the big French industrial conglomerate St Gobain Pont-à-Mousson is now eyeing the national mainframe manufacturer CII-Honeywell Bull. The 53% French stake in CII-HB is owned by Compagnie de Machines Bull, and St Gobain is interested in the 20% stake in Bull held by CGE.

CGE is however not prepared to sell, so St Gobain will probably need to make an offer for some of the 80% of the shares held by the general public.

The deal with Semiconductor involves establishment of a new company, Eurotechnique, 51% owned by St Gobain, which will manufacture National Semiconductor devices and design new circuits for the European market.

## Factory start

WORK is expected to start soon on building the £15 million Newton factory of GEC-Falchid, the newly joint owned semiconductor manufacturer. The company has started to recruit staff and hopes to finally employ some 1,000 people. Production, which will include both memory and microprocessor components, is scheduled to start next summer.

## Police plans

A PROJECT to expand computer resources at Durham police headquarters is at present under consideration by a county council working party. Among the members of the working party are the Chief Constable of Durham and Home Office officials, and although no definite plans have yet been made or complete approval given, one estimate of possible costs is £800,000.

One activity is the Product Bank, which provides funds to member software houses to develop products for international markets, and the other is marketing viewdata system overseas, particularly selling the Post Office's Prestel in the US.

Finance from the Product Bank has gone towards such system software as SPL's Series 1 compiler for RTL/2, System's Vax 11 TT monitor, and interactive graphics products from SPL. Just under £1 million has now been invested.

Insac's books show an operating deficit of £1.3 million for the year, which Pearce said is to be expected at this early stage in the investment process.

Pearce pointed out that Insac is placing particular emphasis on the acquisition or establishment of distribution channels in key markets.

Market development is getting increasingly important, he said, and that is why the firm avoids investing in products which lack a clearly defined path to the end user.

## DC-10 team re-creates death flight on simulator

WITH the dust still to settle following the loss of an American Airlines DC-10 passenger jet at Chicago three weeks ago, the aircraft's maker, McDonnell Douglas, is to try to re-create the flight on a simulator, to determine what actually happened when the port engine broke free.

Using its own simulator, first installed at the company's Long Beach, California, plant in 1969, McDonnell Douglas will be running a test program to try out simulations of the actual flight. Details of this will come from analysis of the aircraft's flight data recorder, a process being carried out at the moment.

In addition to establishing the problems the ill-fated crew had faced as the engine parted from the wing of the DC-10, the company hopes to discover whether it would be possible to still fly, and therefore save another aircraft in the same situation.

It is possible that if suitable flight procedures are found, they could be included in the flight training programmes of airline pilots. Simulated loss of power on engines is already a standard part of such training.

A spokesman for the company said, however, that the task it faces is a long one. The test program has yet to be written



PUPILS from the Longfield School in Kent demonstrate their skills on a microcomputer for the benefit of South-eastern teachers. They are (from left) Gary George, Robert Butler, Nigel Fuller, David Bams and Alan Farley.

## Pupils teach 'Sir' about micros

PUPILS did much of the teaching at a conference at Thames Polytechnic aimed at giving teachers an appreciation of computer education in schools using micros.

Michael St John, a teacher at Longfield School, Kent, brought along some of his 14-year-olds to demonstrate the computers to the teachers, who came from over South-east England.

Derek Esterson, computer specialist for the Inner London Education Authority, stressed the need for LEAs to have a definite policy on DP education. The IEA has decided that all schools should have the same machine, namely the Research Machines 3802, in order to make exchange of software easier.

St John said that local industry is becoming aware of the value of supporting school DP.

## HP software centre in UK

CITING its belief that "the UK is the leading country in the world for software engineers", Hewlett-Packard is to set up a software development centre close to its existing sales and service centre at Wokingham.

Involving an investment of about £8 million, the plan is for 100,000 sq ft office to house around 500 staff. While many will initially be recruited from the US, HP hopes that many of the centre's staff will be British.

## Five performance levels key feature of Univac 1100/60

THE new Univac 1100/60, exclusively previewed in Computer Weekly (CW, May 17), has been announced in one and two processor configurations with CPU and one Megaword of main memory in a single cabinet. Versions with up to four processors are likely to be introduced.

## Compilers, support packs unbundled

THE 1100/60 marks Univac's move into unbundled software, the policy being that the operating system will continue to come to the hardware, but that all compilers and other support programs will in future be charged for.

Existing users in general have five years' grace before they have to start paying, although a few people with one-year contracts will have to start paying sooner. The new rules apply right across the 1100 line, not as yet to the 90 series.

Three major new software products have been announced to the 1100/60: DMS 1100, a Data Dictionary for DMS 1100, and an enhanced version of the DLP, query language processor.

DMS 1100 represents a great leap forward for terminal users since it enables the same terminals to be used both as a transaction processing terminal and a demand terminal; previously two terminals were needed.

Univac believes that the Data Dictionary will significantly enhance ease of use and productivity, while the enhancement of DLP, which previously supported only accesses to DMS 1100, can now be used to access any files. It also offers expanded report writing capability.

Univac estimates that the C2 model with extended instruction sets matches the power of the IBM 4341 and claims that when the latter is run under DOS/VSE price/performance are equivalent. Under VS/1 or VM, the company claims a 10% performance edge at the same price.

Univac claims an exceptional 97% to 98% performance on

enhancement when a second processor is added; 70% improvement for the first additional processor is typical.

As a result the performance range over the 1100/60 line is claimed to be 5 to 1, and for the biggest, four-processor 1100/80, 12 to 1. Against IBM, the 1100/62 dual processor is claimed to exceed performance of the 3031.

The use of multiple bit-slice architecture processors in the CPU makes for exceptional reliability, with every processor function duplicated by a shadow processing unit which checks the performance of the master.

There is a total of 68 Motorola 10800 four-bit micros in the CPU, configured into half-word processors executing three live and three shadow streams in parallel.

Another recompilation will therefore be needed to transfer programs from the 1100/60 to the 1100/80 but otherwise the new system maintains complete compatibility. Models are also available with an 8K word cache memory with or without the extended instruction set.

Interestingly, Univac has adopted the approach announced by ICL on the 2082 (CW, June 7) where the cache is associated with the processor rather than with memory so that input/output operations do not go through the cache. This is an innovation. The cache on the 1100/80 is of the traditional memory-associated type.

In dual processor systems main memory can be expanded to a present maximum of 2 Megawords.

## NCR to set up software queries centre for 8500s

FORMALLY launching NCR's new line of 8500 series mainframes in the UK, its UK managing director Rex Fleet has confirmed that NCR will be setting up software queries centres to answer software queries by telephone. The plans were first revealed when the new 8500 machines were unveiled earlier this year (CW, March 8).

The new 8500 systems are NCR's response to IBM's 4300 series announcement earlier this year and the software support centres will be similar in concept to those proposed by IBM for 4300 users.

No charge will be made for solving software problems over the phone but the customer will be billed if a visit by a systems engineer is needed. The centres will not be up and running until next year, according to Fleet.

NCR's operating and systems software is already unbundled, but with the new 8500s, the company has introduced a new pricing of each system element, including an annual licence fee plan for the firmware that provides each 8500 system with its multiprocessing capability — the most important feature of the new machines.

The firmware licence fee will range from £900 to £8,940 a year depending on the model. Each of the four members of the new 8500 line comes in two models, one of which is a single processor machine capable of

processor machine capable of being expanded to a multiprocessor version.

The earlier 8500 series machines were also available in multiprocessor versions but NCR explains that they were loosely coupled and had separate memories and ran under separate operating systems. The new MP machines come with tightly coupled processors sharing the same memory and the same operating system — VRX-MP.

The smallest member of the new line is the V-8555M which is about 30% more powerful than the earlier V-8550 while costing 49% less. NCR points out that the V-8555M offers 47% more power than the 4381 at 10% more cost. A half Megabyte V-8555M costs £80,800 and NCR charges £7,150 for an additional half Megabyte.

The multiprocessor model, the V-8558MP, with two processors costs £163,100.

At the top end of the line is the V-8588MP, with two processors cost £259,000, compared with £229,000 for the V-8585M, but offering 1.7 times the throughput. The V-8588MP in turn is rated 85% more powerful than the earlier V-8580 while costing 20% less. The basic two Megabytes of the 8585 machines can be expanded to a maximum of six Megabytes in one-Megabyte increments costing £14,500 each.



ABOVE is Univac's latest offering, the 1100/60. It features LSI technology with a multiple microprocessor based architecture.

## Bit-slice chip used in coms processor

NEW with the 1100/60 is a new 16-bit communications processor, the DCP/40, which is built of the same Motorola 10/800 4-bit bit-slice ECL microprocessors. The DCP/40 is attachable to all 1100s and to 90 series machines running under VS/9.

It was designed for use as a front end communications processor offloading all communications functions from the mainframe, a node processor in a network, and as a terminal concentrator.

It is user programmable in a machine dependent macro assembler with programs being down loaded from the mainframe. It offers an emulation mode for the existing DCP processor but is a completely new design.

The processor is a key feature of Univac's DCA distributed communications architecture which supports the International X25 and X21 protocols.

Also announced with the 1100/60 is a new fixed disc subsystem, the 8470, with a capacity of 125.4 Megawords per drive and up to 4,000 Megawords per subsystem. A new 9776, 1,200 lines per minute printer has been added together with 2 new tape units.

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# MICHIE'S PRIVATEVIEW

## The hazards of robotics

"WE are forging ahead on the robot side," says Asca, a Swedish firm whose claim to be listened to is backed by a sales increase last year of 23%. In painful contrast, the DoI's committee on automated small batch production concluded that the UK lags behind our main industrial competitors by about 10 years.

Now an expert panel of the Science Research Council convened by Derek Roberts (recently appointed head of GEC Hirst Laboratories) has delivered its own report on needed initiatives in computing research.

In the section headed Industrial Robotics, the panel states: "Current activity in the UK (both industrial and academic) is disturbingly weak when compared with the situation in US, Germany and Japan."

The report adds that in these rival nations "the scale is massive and will, inevitably, have a significant effect on the com-

petitiveness of British products." Recommendations are fine and forceful:

(a) SRC should agree to take a major initiative in this field.

(b) SRC should appoint a Robotics Programme Director as soon as possible with the terms of reference to carry out an in-depth appraisal of the situation in the UK and abroad in 12-18 months.

(c) SRC should collaborate with the DoI in commissioning a study aimed at identifying research priorities in this field.

(d) SRC should publicise the above two actions widely throughout the academic community, as indicating a positive approach by SRC to this area.

(e) SRC should consider the appointment of an SRC Professorship in this field in a major location.

(f) SRC should review the position in 12-18 months' time. It must be noted that these recommendations, if accepted by SRC, will not on the face of it

commit that body to anything more than general appraisals and discussions of things which some of us feel we know pretty well already. But we should, I think, assume that there is a serious intention on the part of officials who have, after all, already mobilised the money. Moreover, the Roberts team included four academic scientists of the highest quality, together with men of force and calibre drawn from other vocations.

What, then, can go wrong? Hazard No 1. The panel's main industrial aspirations is as follows: "If UK industry can be persuaded to apply robot technology, it will be in a far better position to compete with the countries already using this technique." Note the "if". In words which I have used before (CW, May 11, 1978):

So long as the annual rate of investment in new plant and equipment runs at about one half that of the main com-

petitor nations, our factories cannot afford even to assimilate the inventions of the past, let alone take up revolutionary novelties.

The arguments in support of this statement stem from economic arithmetic. They were long ago patiently marshalled by Sir Alan Cottrell<sup>2</sup>, and have never, to my knowledge, been disputed.

So if applicable new technique does eventually result from the Roberts initiative, the beneficiaries will not be British enterprises, which cannot afford to pick them up, but our industrial enemies who can.

Hazard No 2: The panel correctly identifies the point at which the road to scientific achievement has been lethally mined. Speaking of academic robotics, the Report states:

The panel has no doubt that the reluctance of the present community to take up the challenge is due at least in



part to the general discouragement of artificial intelligence which took place in this country several years ago and that it is now up to SRC to take steps to remedy the situation.

Logically, even so restrained a reference to the root of the trouble should have been followed up under Recommendations. I would have liked to see something like:

SRC should re-evaluate their past and present assessments of artificial intelligence as a scientific field. In the event of a favourable re-evaluation SRC should without delay make known that AI is now viewed as a valid discipline of high timeliness and promise with regard to the whole evolving front of information technology, including robotics.

Building robots without artificial intelligence is like building aeroplanes without aerodynamics. It can be done, but the results are not likely to impress the rest of the world. This is why Hazard No 2 has to be seen to have been defused before needed scientific talents can be remobilised.

What kind of academic artificial intelligence work could then be rebuilt as long-range support to industrial robot work? I cannot answer this question better than with the words I spoke in March 1973 at Wilfrid Higginbotham's First International Conference on Industrial Robot Technology. I was presenting the first (and a fate had just decreed, the last) fruits of the Edinburgh Fredo project:

"The technological goal of such work is the design of programming systems which can, to some degree, be made

a) "teachable", and  
b) "self-programmable".

Although not mentioned in the Roberts Report, these goals remain absolutely critical. They also have a wider significance for the entire computing industry. As I warned last year (CW, October 12, 1978), if the markets of the booming microelectronics industries are not to collapse from program starvation, radical innovation, not just improvements here and there, is needed in automatic programming.

What I might have added is that this need is inseparable from detailed experimental study of two issues of artificial intelligence on which teachability and self-programmability will be found to hinge, namely machine representation of knowledge and the automation of perceptual learning.

If Hazards 1 and 2 can now be overcome, then the way may have been opened by the Roberts panel to new and exciting times.

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national funding.

## SOFTWARE FILE

## For running under CP/M

A RANGE of commercial application packages running under the microcomputer operating system CP/M have been developed by Shubbrook Microsystems, of Slough, Middlesex. So far included are: Abacus TEL and Compilog Series 1 systems, the packages include sales, purchase, and general ledger; stock control; invoicing; mailing; and word processing. Shubbrook is also interested in marketing other CP/M packages on behalf of their authors.

## TSI launches document storage/retrieval system

THE release by TSI of a sophisticated information storage and retrieval system has cast an interesting light on two recent US take-overs, nicely illustrating how a vertically integrated total system capability can be built up

by corporate acquisition. The new product, Docu/Master, addresses much the same type of application as IBM's Stairs or Harwell's Status, providing a means of indexing and manipulating large volumes

of "unstructured" data, typically text.

It would thus be a natural tool for use with the giant information databases maintained by Dun & Bradstreet, the US publishing company which became the ultimate owner of TSI last month.

Dun & Bradstreet, for example, holds the world's largest database on the credit status of companies and is also a major publisher of airline timetables. It acquired TSI when it took over National CSS, the time sharing company that bought TSI earlier this year (CW, January 11).

National CSS also markets an IBM-compatible "super minicomputer", the NCSS 3200, giving the group a total capability that could result in some interesting joint products.

One possibility, for example, would be to mount the Dun & Bradstreet databases under Docu/Master on the CSS network, this making them immediately accessible to any time sharing customer.

The company could also offer a complete in-house application machine, incorporating the NCSS 3200, Docu/Master, and one or more of the databases.

And further possibilities would be opened up by tapping the micrographic capabilities of NCSS's Zyrion division.

TSI will of course in the first instance be marketing Docu/Master as a stand-alone package and sees it in this context as the

first really practical system yet to have been developed for handling large text databases.

Other systems, it argues, impose a penal overhead of between 150%-200% when a file is fully inverted; this is because they typically use an index system based on pointers, whose length exceeds that of the average English word.

Docu/Master by contrast uses a bit map, reducing the indexing overhead to an average 50% of the basic file size.

The system is also economic in its use of processing resources, a maximum of four I/O requests being required to get to any document.

Already in use at the New York Times, Docu/Master originates from Imdoc, a product bought by TSI from a small Swedish company. Imdoc

has been further developed by TSI over the last 18 months.

It is currently available under DOS/VS and most OS/VS versions, requiring a minimum 256K processor. It will also operate online under both CICS and TaskMaster.

Prices are £23,500 for the DOS version and £31,500 for OS with corresponding rental charges of £655 and £875 per month.

• Ford in Cologne has become the 101st European user of TSI's teleprocessing monitor TaskMaster, which is already in use at several Ford sites internationally.

# Major reports hit at DBMS myths

A NUMBER of popular beliefs about database management systems are challenged in two major database reports due to be published this month.

In a report following studies for the Department of the Environment, BIS Applied Systems concludes that although data independence is "a much requested and much cited reason for a move to using DBMS," none of the packages looked at offered a complete range of data independence facilities.

"None of them provides as much data independence as is desirable," the report says.

**Puzzler**

|       |       |
|-------|-------|
| ARC   | FG    |
| DE x  | HI x  |
| 3,634 | 3,634 |

These two multiplication sums have the same product, and consist of the nine digits from 1 to 9, used once each. The 3,634 total is the smallest possible in these circumstances.

Can you reconstruct the two sums before turning to page 61 for the solution?

Further, "some design options available, such as the use of pointers, may actually be in conflict with data independence."

Meanwhile a survey by Butler Cox and Partners has found an unexpectedly high level of user satisfaction with the database approach, contradicting the common impression that DBMS are troublesome and unreliable.

The BIS report, Database Techniques, originates from studies funded by the DoE as part of its Logis project (CW, September 28, 1978). It is intended as a general reference book for prospective database users.

A substantial part of the 900-page document is devoted to the evaluation and selection of database software and rather than attempting to identify a "best buy," it concentrates on the principles by which a selection should be made.

Data independence is one of a number of key facilities picked out by the report as deserving special attention.

Another is the capacity for multi-threading, both in the TP monitor and in the DBMS itself. Few DBMS packages provided

true multi-threading until recently, notes the report, and prospective purchasers should check carefully the position of packages in which they are interested.

Among other critical areas mentioned are the quality of the interface between the DBMS and the TP monitor and the availability of a complete range of utilities for loading, unloading, and reloading databases.

The Butler Cox survey, which canvassed the DBMS experience of 100 users in the UK and Europe, is one of the inputs to The Future of Database Management Systems, due to be published this month for members of the Butler Cox Foundation.

Of the sample, 94% rated their experiences of DBMS as "positive" and all the major products on the market were well regarded by users. This was despite the fact that the highest number of respondents were IMS users.

Asked to rate their DBMS on a five point scale ending with "poor" and "dreadful," none awarded a rating of "dreadful" and only 4% thought their package "poor."

Database Techniques, BIS Applied Systems 900 pp, 140 diagrams, £55 (plus £1 postage for UK customers).

## PROGRAMMER NOTES

THE reverence accorded to top-down methods — and the fact that they are usually an inherent part of structured programming methodologies — could lead one to think that there was no other valid approach to program design. Yet most of those involved in software development would recognise frequently influence their thinking at an early stage.

A useful reminder that top-down and bottom-up approaches are not comprehensive and mutually exclusive alternatives is one of many useful points made in an illuminating textbook on structured programming methods.

"A pure top-down or a pure bottom-up approach can cause design problems," the book argues, noting that neither approach can always be applied without exception throughout the design.

"For example, if a top-down approach is used exclusively, common functions may not be recognised — especially if they are invoked at different levels in the program control structure."

"Also, following a strict top-down approach, which begins from a single starting point, may require too much elapsed time for the development of a large program."

A pure bottom-up approach may also lead to problems, the book argues.

For instance, data that is accessed by several program modules may never be properly defined. Further, the simultaneous definition of module interfaces by more than one programmer may make component integration difficult.

In general, "the top-down approach is preferred when the programmer is certain he can construct implementational components to meet the specification requirements. It is also preferred when decisions concerning data structures must be delayed to avoid discounting alternative solutions."

"On the other hand, the bottom-up approach is preferred when the programmer knows he can combine existing components to form the program. This is the case when the program task is a generalisation or an extension of an existing program."

The book concludes by noting that no design approach can answer specific design questions for a program and how well either approach works ultimately depends on the skills and experience of the programmer.

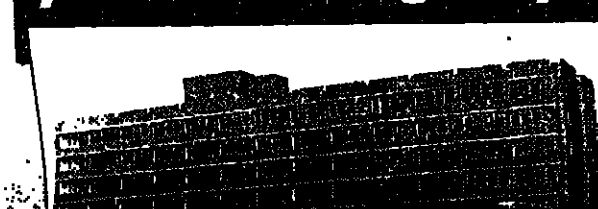
Structured Cohol Complexity through Structured Programming, by Carma, McClure, Van Nostrand Reinhold, 192 pp, £11.50.

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## OP SPOT

## Monitor: a command which is seldom fully exploited

BY means of the IBM OS Monitor command, the operator is able to find out a considerable amount of information about the state of the system, but at many installations this facility tends to be seldom used.

To save the operator an unnecessary amount of typing at the console, the command may be abbreviated to MN. Here are some applications for the command.

**MN Jobnames, t**  
This command will cause the system to issue a message to the operator, including the jobname and time of day, each time a job starts and finishes.

Incidentally, the above command is one which tends to be widely used among IBM OS operators. Rightly so, in my view, because the information it provides is often of use to operations staff when dealing with user inquiries.

As an alternative to the above, the operator might use Monitor

to get a dynamic display of all the active jobs in the system. (By "active" I mean all the jobs actually competing for processor time, and not those on the system input and output queues.) The command is as follows.

## \* MN A

It is also possible to get a dynamic display of all the jobs on the system input and output queues, thus.

## \* MN N

And to get a dynamic display of the number of jobs on the system input and output queues, the operator enters.

## \* MN Q

As described in a recent Op Spotting (CW, May 24), Monitor may be used to display the status of a job's datasets at the time of its termination. The command is as follows.

## \* MN DSNNAME

Similarly, it may be used to display the status of each job's

kept, catalogued and uncatalogued datasets at the end of each of its job steps.

## \* MN STATUS

And Monitor will cause the available space on a direct access device to be displayed as it is unloaded by the system. Command.

## \* MN SPACE

"Before entering these commands, the operator must set up a display area on the console and specify the rate at which it is to be updated. He does this by means of the IBM "K", or control command, in a two-step procedure.

1) This command tells the system to set up a display area of six lines.

## \* K A,06

2) And the following instructs the system to update the display every 30 seconds.

## \* K MUTIME=30

## 'Unions more help than job-hopping'

By Bernard Allen



Tim Webb

Astral Computer Services, a bureau in the City of London (CW, May 24).

In essence, he said that there is no need for DP staff to become involved with unions and that if an operator is dissatisfied with his site he should move to another.

Replying specifically to O'Reilly's comments, Tim Webb of ASTMS said, "Whether or not you are in favour of unions, his advice is downright daft."

And, according to Webb, an employee must be with a company for at least two years before he can appeal against unfair dismissal or receive compensation in the event of redundancy.

Pointing to the benefits of union membership, he continued, "Under the Employment Protection Act, union members must be given at least 90 days' notice in the event of redundancy."

"And under the Health and Safety at Work Act, the employer must consult the union about changes which might affect the well-being of staff. The VDU issue is very important in this regard."

Ian Benson of AUEW/TASS responded by saying, "That seems a rather short-sighted view to me. Someone who's had more than two or three very short-term jobs can't have very rosy career prospects because

companies will be reluctant to employ him."

He also gave his views on how union involvement will help DP staff deal with the effects of new technology over the next ten years.

"If the new technology affects anyone, it affects computer staff — and that includes the operator."

"And I can see the changes of the next decade being at least as dramatic as those of the last," said Benson.

Referring to the activities of AUEW/TASS in this context, he went on, "Our members go on training courses intended to help them overcome any problems which might occur as a result of microelectronics."

"The courses are funded by the Engineering Industry Training Board and held at colleges of further education."

According to Benson, the EITB courses are open to



Ian Benson

members of all engineering unions.

Echoing the views of Webb and Benson, H. Moore, a DP staff representative with APEX, writes, "The chief operator you quote is entitled to his opinion, but he must surely be disappointed if he believes any operator worth his buttons will be converted to his non-union views."

By involving themselves with unions, operations staff can do much to improve their lot, he adds.

## Health problems do not deter BCS Ops Group chairman

DESPITE recent poor health and a change of job, Barry Patman is to continue as chairman of the operations specialist group of the British Computer Society.

Patman, who resigned from his position as operations specialist with Infotech in April, told me:

"Soon after leaving Infotech I went for a routine medical check-up and had to go into hospital to be treated for a her-

nia. Unfortunately there were complications and I won't be fully fit for some time."

He is currently seeking a position, possibly in operations management, in or around the West London area.

Said Patman, "If I get a position in that area, I will be able to get things working again in the operations specialist group."

## Looking for jobs in Midlands

OF the 23 students who attended the recently completed TOPS operations course at Borehamwood College, four are still seeking positions in the computer industry.

Two of them have their own transport and are prepared to re-locate but the others are more restricted, according to Derek Pinnock, TOPS operations lecturer at the college.

He said, "The boys from Great Yarmouth, in Norfolk and

Basingstoke in Hampshire have their own cars and are prepared to move to most areas for a right position."

"But Arun Patel, who came from Luton, and Whitehead who lives in Herts, are looking in or around their own areas."

For further information, contact Derek Pinnock, Borehamwood College, 0024

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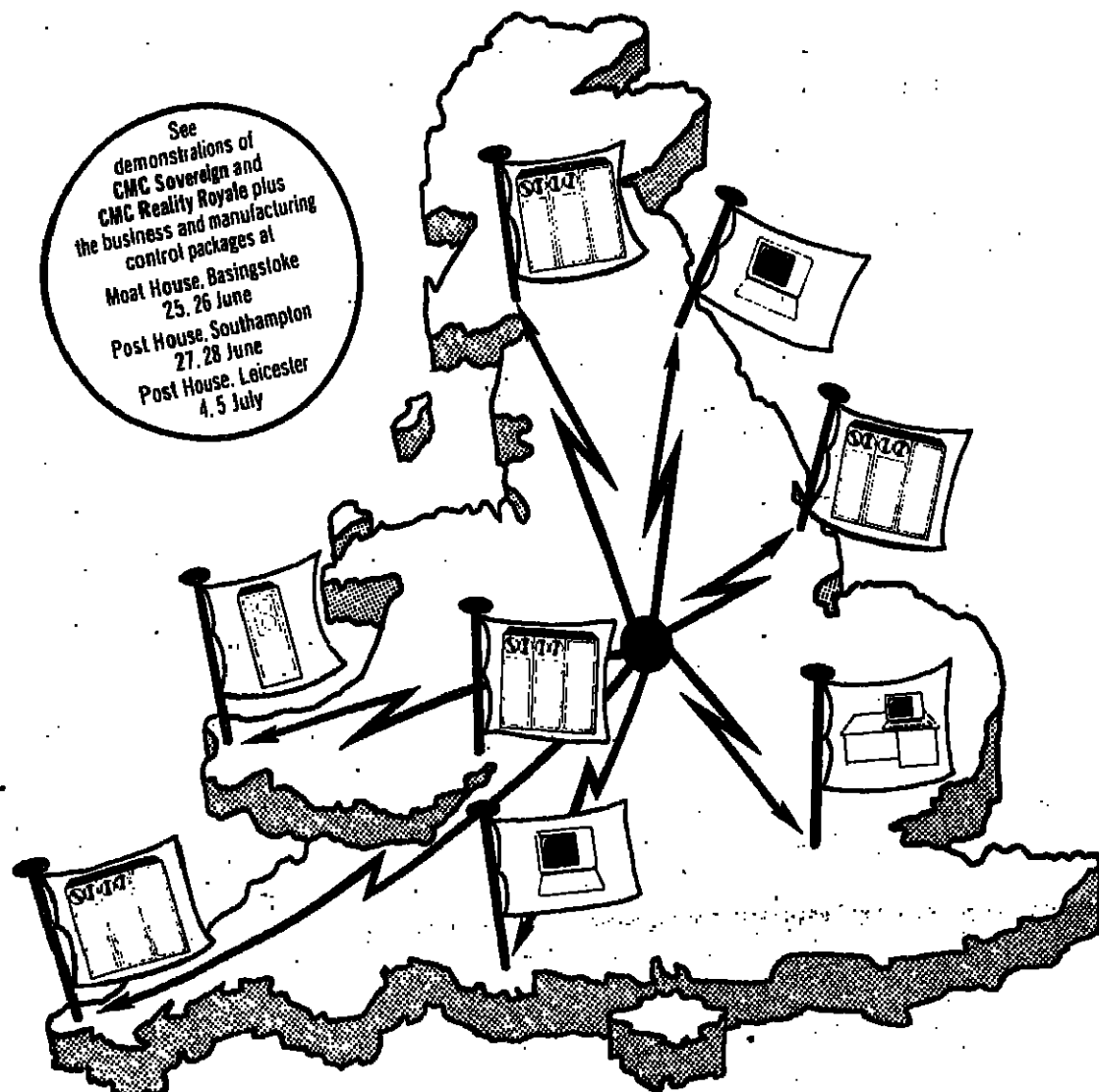
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(CS CW 138)

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## PEOPLE AND EVENTS



## Appointment to board at IBM UK

IBM UK Holdings and IBM UK have announced the appointment of John Barrie Morgan to their boards. He is currently IBM UK's director of finance, and has held this position since 1978.

Morgan, who is also a member of the board of IBM UK Rentals, joined IBM in 1967, starting as cost accountant at Havant, and then as a financial operations manager for IBM Europe. In 1976 he became controller of IBM UK.

He has also worked for the Steel Company of Wales and for British Rail.

Alan Studholme has joined Redifon Computers as territory manager for the Midlands branch. He was previously an employee of Baric Computing Services as territory salesman. Branch manager for the Midlands branch is Philip Moore, a former marketing manager for Iel in the State of Victoria, Australia. Robert Allerton has become territory manager for the Northern branch, having joined Redifon from Donoghue Information Systems where he was a sales executive.

Carol Hearn has become regional sales manager for London and the south-eastern Home Counties for Nashua Computer Products. She will operate from Loughton in Essex, and will be responsible for sales and marketing of all Nashua's magnetic storage media. Hearn used to work for Gesteiner Duplicators as a saleswoman.

Arthur Cannell has joined the data communications division of Harris Systems as a systems engineer for the 8000/1800 ranges of distributed processing and RJE terminal systems. He was formerly software development manager with Thomas de la Rue.

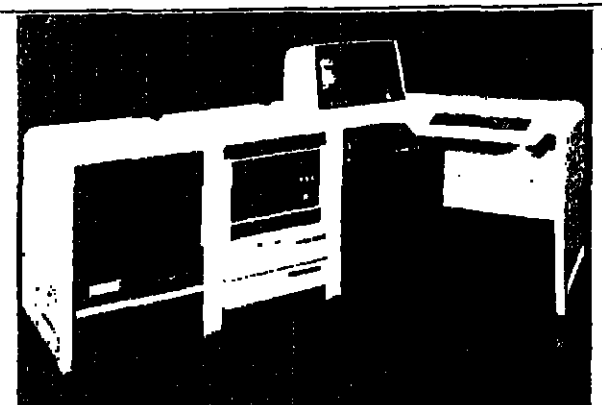
William Ward and John Smith have both become systems consultants with Package Programs. Ward used to be manager of one of Douglas Moore's London bureaux, and Smith was previously chief programmer with the insurance brokers Alexander Howden.

Alexander Anderson has been appointed general manager of Informatica UK. Until recently he was director of Eastern US operations for the company.

Ian Wallace, formerly a systems engineer with Alfred Herbert, has become a systems engineer for the data communications division of Harris Systems.

## Head of GI's European lab

General Instrument has chosen Theo Helthorn to be manager of the company's new application laboratory. He was formerly product manager for all of General Instrument's wire wound components. The laboratory, which is based in Munich, offers technical support throughout Europe and is equipped to do testing and development work for rectifiers and bridge rectifiers.



## KEYPACT. A Key to Disk system with RJE &amp; batch processing.

Simple, but powerful KEYPACT offers ease in formatting, validation, verification and reformatting. Without disturbing the data entry operation, concurrent programs can be run to support the local processing. Up to 31 keystations, local or remote, are supported by a 16-bit computer (up to 256K bytes). Disk memory ranges from 8.8MB to 400MB.

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By Judith Morris

## ICL award for NELS student

A FORMER student at the North-East London Polytechnic, Ajay Johamputra, has not only received his IIND in Computer Studies, but has also won an ICL prize of £20.

ICL award the prize annually to a student from the North-East London Polytechnic's systems and computing department who has made the most significant contribution during the final year of the course.

Ajay followed a sandwich course, and spent his second year with ICL. He gained four distinctions in his computer studies course, and has now got a job as a programmer for the Borough of Southwark.

## DIARY

JUNE 14  
Computing in structural steelwork. Institution of Civil Engineers, Great George Street, London SW1. £30.

JUNE 18  
World fertility survey: technical problems of international research, and AGU Study group on computers in survey analysis. London School of Hygiene and Tropical Medicine, Keppel Street, London WC1. £7.50.

JUNE 18-21  
Computer applications in shipbuilding. 1979 International Conference. ICCAS, University of Strathclyde, Glasgow.

JUNE 19-21  
IMMM '79 Exhibition and conference. London Chamber of Commerce, Greater London Council, London Chamber of Commerce, 01-248 4444.

JUNE 20  
Why will we use the general purpose computer? IDPM, Pearl and Dean Studio, Broadwick House, Broadwick Street, London W1. £10.00.

New approaches to systems analysis and design. H. Gearing, E. Mumford. BCS, Kensington Chase Hotel, London W8. £5.00.

Distributed processing, North East London Polytechnic, Barking. Details 01 500 5141 ext 40.

JUNE 21  
Pattern recognition and flexible automation. J. Weaver, Oxford University, Nuclear Physics Institute, Keble Road, Oxford. £10.00.

## Liveness File

By Don

I HEAR THAT ONE WATER BOARD RAN A FUEL ECONOMY PROGRAM.



...TO FIND OUT THE ONE BEST WAY TO CUT PETROL COSTS.



...NOW EVERY VAN...



...HAS GOT A BRICK IN ITS TANK.



...HAS GOT A BRICK IN ITS TANK.

A Winston Churchill Travelling Fellowship grant, worth £2,400, has been awarded to Brian Payne, who is a blind senior programmer with the Data Processing Service. He is seen here using an Opticon, bought for him four years ago by the Post Office, which is a device allowing blind people to "read" documents. The effect of this device led Brian to form Electronic Aids for the Blind, a registered charity.

He is to use the money touring America, and visiting several manufacturers who specialise in electronic aids for the blind.

## Scan Data appointments

SCAN Data International, after acquiring Ruf Computers, has announced the appointment of John Neaves as deputy chairman. He is succeeded as managing director of Scan Computers by Steve Russell, and Noel Atkins takes over as sales manager.

Peter Beckett has become managing director of Ruf. He was previously employed at Burroughs. Andrew Bowen, formerly with accountants Coopers and Lybrand, joins the group as financial director and company secretary of Scan Computers.



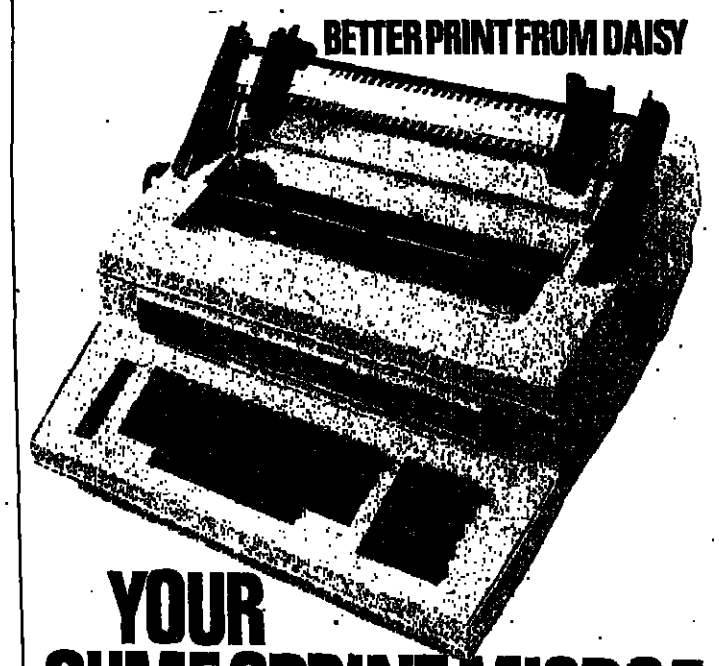
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## LETTERS TO THE EDITOR

## Govt aid to ICL no longer needed

YOUR editorial "The sell-out of the century" (CW, May 31) displays an unusual lack of economic understanding.

You assert that ICL is a "national asset". What does this mean? Why pick on ICL? Is IBM a national asset? Or Computer Weekly?

If you are simply referring to

companies in which the government happens, at a particular moment in time, to have a shareholding, this is no argument to support your case that that shareholding should not be diminished.

It is not true to say that the investors will now reap the benefit of public investment. Those

people who have (wisely) invested in ICL in recent years have indeed seen a good rise in the value of their shares. If the government now sells some of its shares, the immediate benefit will be to the government (ie the taxpayers) since the selling price will be higher than the buying price.

To consider your final and most important point, it is important to ask why have the "high risks" deterred investors. Investors are certainly not deterred now from investing in ICL, so arguably the government's aid has served its purpose and is now no longer needed. The government shareholding in ICL can therefore be redeemed and put to better use. Such a use could be in reducing income tax, and in removing or reducing capital gains tax and tax on dividends.

J. S. GRANT  
Nine Tiles Information Handling  
Cambridge.

Bexleyheath, Kent.

## IBM—no plans to manufacture in SA

YOUR article South Africa: Likely to Go it Alone in Manufacturing (CW, May 31) contains a statement which may mislead your readers, in that it may give the impression that IBM is engaged in on-going activities with regard to

manufacturing in South Africa. To clarify the situation we should like to state that we have no plans to build a manufacturing facility in this country.

JOHN CLARKE  
Managing Director  
IBM South Africa.

## Committee's principles for privacy won't work, says Scottish Law Society

THE legal principles for computer privacy proposed by the Data Protection Committee could make relations between a solicitor and his client "almost impossible," the Law Society of Scotland has claimed in its submission to the Scottish Home

and Health Department, adding that relations between the Law Society and its members could be detrimentally affected. The DPC failed to give adequate regard to the rules that govern the professions, the Society claimed, and to the ways

in which the law operates differently in Scotland from the way it does in England. There would be grave problems. In the view of the Society, if a solicitor were obliged to disclose to his client all documents on his file. These might include medical and psychiatric reports, and papers passed to him by other solicitors.

The operations of private law firms posed no threat to privacy, the Society felt, and should be exempted from registration.

The Society also expressed concern over the control of medical records and employee references. There was no point in allowing patients access to their medical records if all diagnosis and prognosis were excluded. Also, references would become useless if they had to be disclosed.

The Society also expressed concern over the Data Protection Authority's ad hoc discretionary right to decide such matters as whether patients should have access. If there were such a right it should be embodied in legislation.

As there was no way of telling what would and what would not fall within the ambit of the regulations, it was impossible to estimate what the costs of privacy laws would be.

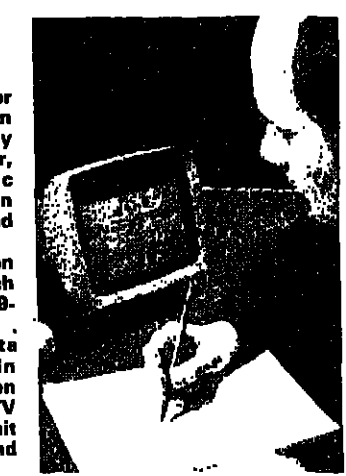
Since the change of government, the Home Office is continuing its gathering of views on the DPC proposals, but the Tories have not yet decided whether they will do anything about legislation.

## Digivision display unit rejigged

IMPROVED picture quality over earlier models of this 80-column Executive Monitor is claimed by its maker, Digivision of Leicester, since discarding the acrylic screen filter in favour of a plain cathode ray tube with a bonded face plate.

Modifications have also been made to the control box which can be housed in a desk or a 19-inch rack.

As well as displaying data such as computer output in alphanumeric form, the screen can be used as a closed circuit TV monitor. Priced at £280, the unit is designed to be unobtrusive and at home in plush surroundings.



## A system for estate agents

A COMPUTER system designed specifically for the estate agent has been developed by Sword Data Systems in conjunction with Rair. Available in two versions, it features the Rair Black Box microcomputer system and a VDU and printer. One costs £5,950 and has a Decprinter IV,

while the other costs £6,955 and has a Hyterm printer. Basic software handles the day-to-day routine work of an estate agent's office but Sword says that other applications, such as text processing, invoicing, and financial ledgers, will be available later.

## The European EDP Forum

## SYSTEMS 79

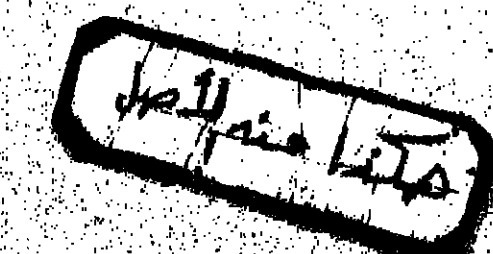
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## MICRO NEWS

# Advance news on 68000 peripherals

WITH Motorola's 68000, 16-bit microprocessor now just three or four months from introduction in sample quantities, the company last week gave the first details of a range of peripheral devices to be introduced to support it.

Speaking at the Motorola Microforum in London, Tom Gunter, manager of Advanced Computer Systems for Motorola in Austin, Texas, talked about a new memory management unit, a bus arbitration module and a direct memory access controller as the first devices planned to complement the 68000.

He stressed that the information given was very "advanced", even going to the lengths of showing a slide with an official Motorola "escape clause" reserving the company's right to change the specification of the devices.

The memory manager, type

## Pet Surgery venue changed

THE venue for the forthcoming Pet Surgery, to be held by the Micus Group of the Institute of Data Processing Management, has had to be changed following the unexpected success of the Group's first meeting.

It is now to be held in the downstairs bar of The Phoenix hostelry, 37 Cavendish Square, London, W1 on June 28. Opening and closing times will be 5.30 pm to 9 pm.

Micus will be providing several experts on the Commodore Pet microcomputer to help and advise users and potential users.

After the Pet Surgery, the Micus Group is planning to hold a phone-in surgery for people who can't get to London.

number 68100, will assist the 68000 CPU in the task of addressing its maximum memory capacity of 16 Mbytes. Though not a necessary requirement for the CPU in addressing this amount of memory, the management unit provides several important systems functions to expand the capability of the device.

Among the most important is the capability for virtual memory operations, where the 68100 acts as the interface, sitting between the CPU and the main memory. Each management unit supports up to eight memory segments, with full protection for each, and the capability for virtual memory follows from the ability to cascade the management units to allow for any number of segments.

For the expected growth in multiprocessing applications for micros, the bus arbitration module is being developed. Known as the 68110, it will be able to take care of all necessary handshaking, providing such features as address translation and the mapping of interprocessor addresses, as well as organising priorities of system buses.

An interesting feature will be the ability to establish a global bus in multiprocessing configurations, providing the necessary synchronisation between buses that may be operating asynchronously.

This device will also work with the 68000's bus error mode, a method of catching parity errors by halting the system.

The direct memory access controller, to be called the 68130, will provide memory to memory block transfers faster than the processor will be able to, and will also reduce the processor overhead.

Providing four DMA channels, it will have a 16-Mbyte addressing range with a 65K-byte count range, and should prove an essential ingredient in establishing virtual memory based systems.

A peripheral processor unit is also understood to be in development. Although no details of this were given at the Forum, it is likely to be used for reducing processor overhead in controlling the operation of peripheral hardware.

Apart from aiming at easing hardware design problems with these new devices for the 68000 processor, there is also a strong bias towards easing the major problem of software development and implementation for microsystems.

According to Murray Goldman, microcomputer operations manager for Motorola, also speaking at the Microforum, the software problem was not being fully addressed at all, even in the UK where software writing skills are high.

Programmer productivity is still at the level of 10 lines of debugged code per day, he stated, and the cost per line — now around \$10 — is rising every year. "The objective must be to get this down to 5-10 cents per line," Goldman said, "to match the price/performance capabilities of the hardware."

## TI entry into personal market disappoints observers in US

THE introduction of the 99/4 personal computer by Texas Instruments (CW, June 7) has come as a considerable disappointment to US observers of the company. Many had predicted that the entry of TI would radically change and expand the market available to all the manufacturers.

Ben Rosen, a noted Texas Instruments watcher, who is a stock analyst with New York brokers Morgan Stanley, said after the announcement of the 99/4 at the Chicago Consumer Electronics Show in the US that he was very disappointed with the product. "It looks like a mid-range machine that has been configured for the consumer market," he said.

Certainly it differs from the 99/4 predicted by Rosen (CW, April 12), in that the 16K-byte memory is not expandable, which would seem to limit its development as a small business system.

Texas takes the line that this is not the market it is after with the 99/4. It feels there is considerable scope specifically in the domestic and consumer market. The system itself, at \$645 without a display which must be purchased separately, uses plug-in firmware programs called Command Modules. These run under TI's Ansicompatible extended Basic, which is held in ROM in the machine.

## Tektronix emulator for 8048

AN emulator for the Intel 8048 single-chip microcomputer is to be made available by Tektronix to allow the device to be supported by its 8000 family of development systems.

Engineering development is currently under way on the emulator, which will be able to support both hardware and software development work on



## Complete Apple system in UK soon

AS it introduces an upgraded version of its Apple II microcomputer, called Apple II Plus, the US company is to make a major play for the small business market with the launch of a complete packaged system.

Known as the Apple II Business System, it is based on an Apple II Plus equipped with 48K bytes of memory. To this have

been added two disc drives, a video monitor, an Impact printer, and a software package called The Controller.

The US price being quoted for the system is \$5,000 complete. In the UK, Apple distributor Personal Computers is hoping to start shipping the system to dealers within the next couple of months. Pricing details are not yet available, according to managing director Mike Sterland, and the final UK price will depend on the amount of "amalgamising" required.

The key to the system is The Controller, a suite of three programs aimed at the common small business data processing requirement.

A General Ledger program is included, which can maintain a

file of up to 250 types of account, with up to \$99 million in any one account (in the US version). Up to 1,000 journal entries can be made per month. Management summaries of accounts, revenues and expenses can be generated, as well as balance sheets and income statements.

Accounts Receivable will maintain a file of up to 250 customer accounts and process 1,000 invoice statements per month. The system will produce a detailed summary of receivables.

Accounts Payable maintains a file of 100 vendors, and allows up to 300 invoices per month.

The Plus in an Apple II Plus is the inclusion as standard of resident Applesoft extended Basic, together with a new Auto-Start control ROM.

## Ohio's C3-C bridges the gap

LOOKING for the market slot between floppy disc based systems and configurations using high capacity hard disc storage, Ohio Scientific has introduced the \$10,000 C3-C system, based on its Challenger III processor.

It makes use of a 29-Mbyte Winchester technology disc drive manufactured by Shugart, with the aim of filling the performance gap between floppy

disc and large hard disc systems.

The full configuration consists of a Challenger III processor, which incorporates three different microprocessors, 48K bytes of memory, the Winchester disc, and a pair of floppy discs for file backup.

The Challenger III uses 6800, Z80 and 6800 processors, so that software written for any of these can be run on the system.



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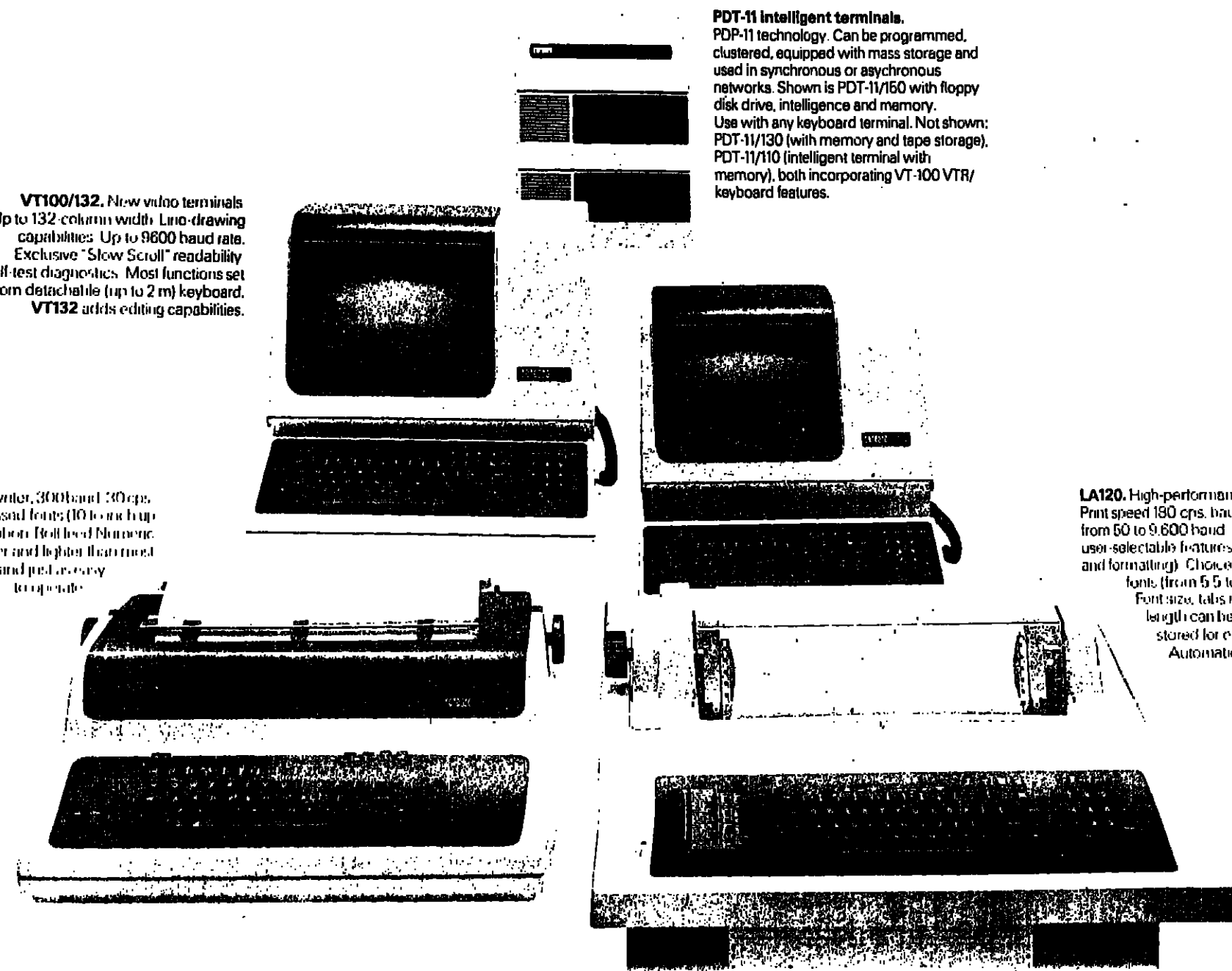
## NEW TERMINALS FROM DIGITAL EQUIPMENT

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**LA120.** High-performance terminal. Print speed 180 cps, baud rate selectable from 60 to 9,600 baud. (More than 45 user-selectable features relating to printing and formatting). Choice of eight compressed fonts (from 5.5 to 16.5 to inch). Font size, tabs margin and form length can be set at keyboard, stored for easy recall. Automatic self-test.



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each terminal to blend compatibly with the modern office environment. Keyboards are standard typewriter layout, with keys finger-sculpted and position-identified to maximise acceptability by any keyboard operator. Operator status lights are standard.

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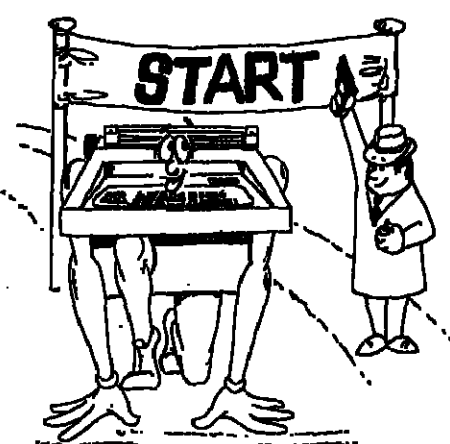
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## TIM PALMER AND CHRIS HIPWELL REPORT FROM NCC '79

AS the NCC closed its doors on Thursday last week with an all-time record attendance of 78,843, nearly 38% up on Anaheim last year, the overall impression was of a non-vintage show.

Most of the products had been heavily pre-announced and, of the major launches, only the Univac 1100/80 and the Wang VS-100 s/d VS/WP really stood out as major advances.

Probably not more than one visitor in 100 even discovered an enormous overflow

exhibition area 15 hot minutes' walk away from the Coliseum at the Hilton, where major companies like Fairchild and Fujitsu were among scores of late entry exhibitors.

The personal computer fair held at the Sheraton Centre Hotel has also lost almost all its amateurish enthusiasm and is now just another big trade fair, ripe to be hived off from NCC and held at another time.

Many individual conference sessions were stimulating and controversial, but the lack of any strong overall themes and a studious

determination in choice of papers and subjects to avoid acknowledging the overwhelming domination of IBM over the industry, seriously weakened its overall impact.

Despite these reservations, the NCC remains the premier US computer event, and a must on the schedule of everybody seriously involved in the industry. The only confident prediction that can be made for NCC '80, due to be held at Anaheim, is that there will once again be more exhibitors playing to more delegates than ever before.



Above is Honeywell's PPS 11 page processing system. It operates at speeds of up to 600 pages a minute (18,000 lpm) and is compatible with IBM and Honeywell mainframes.

## 8-inch Winchester plugs OEM gap

PUSHED to meet demands of the booming OEM and systems house business in the US, hardware manufacturers are seeking to close gaps in the spectrum of memory devices available to the systems builder.

The result, particularly evident at the NCC, is the emergence of an 8-inch Winchester

drive. These units, which are based on the Winchester 3350 technology originally developed by IBM, provide greater recording density, more tracks per disc surface and a faster transfer rate than the 8-inch floppy disc.

The combination of the Winchester read/write head and the fixed disc makes for an inherently more reliable subsystem. Five to six times the reliability of present fixed and removable drives at around one third the cost, has been claimed.

Companies which have introduced 8-inch Winchester drives include BASF, International Memories, Kennedy, Micropolis and Pertec.

The BASF 6170 series fixed disc drives, which are initially being manufactured only in the US, offer recording capacities of 8 to 24 Mbytes and a transfer rate of 800K bytes a second. Both International Memories and Pertec have introduced 20 Mbyte units, with Pertec's D8000 drive operating at a transfer rate of 870K bytes a second.

The Kennedy Series 7000 Winchester disc drive stores up to 12 Mbytes of data on two platters and the Micropolis Micro Disk 1200 series stores from 8.8 to 44.8 Mbytes on up to three discs.

The Micropolis series is particularly impressive with a wide range of options in terms of encoding methods, recording densities and storage capacities.

Also on the disc front, New World was promoting a 2.1 Megabyte 8-inch disc with 20 heads in a 9.5 by 9.5 by 2 inch enclosure which gives a very fast 18.8 millisecond access time and worst case 51 milliseconds. Called the Mikro-Disc 211, it costs under \$1,000 in quantity.

## Graphics advancement

THE addition of a graphics print-out capability on the Data-products T80 thermal matrix printer has excited considerable interest in the personal computing market.

The OEM printer specialist showed the T80 attached to an Apple II personal computer, outputting a variety of pictures using a 70 x 70 dots per square inch matrix.

The printer is driven by an internal Intel 8035 single chip microcomputer which has 256

bits of on-chip ROM, and extra memory has been added to support the graphics feature.

Applications envisaged include low cost printouts of medical scans, vibration analysis in laboratories, and producing hard copy of screen plots in computer-aided design.

A commercial artist is already using it to produce the monochrome colour separation overlays to take to the printer, thereby, he says, saving considerable time and money.



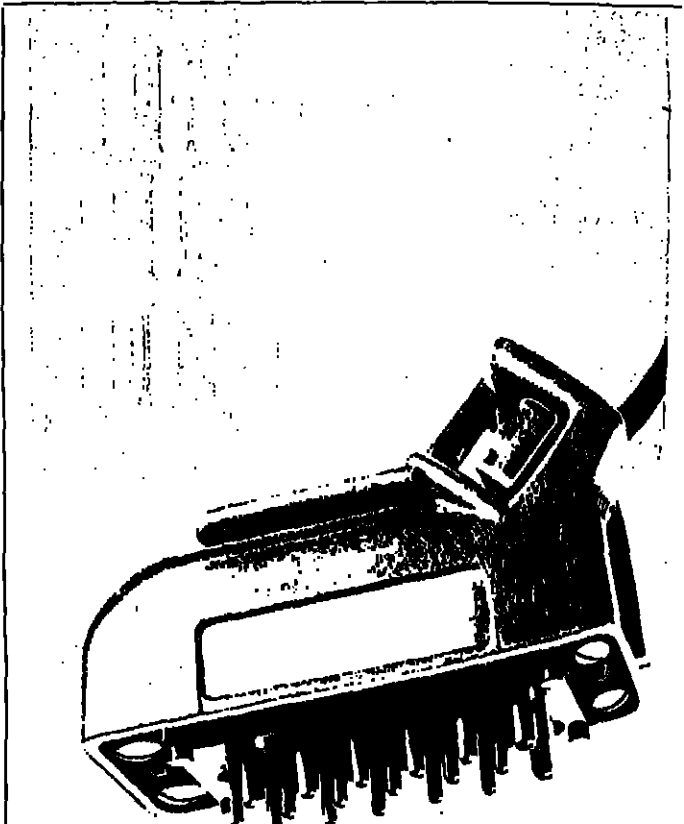
Burroughs' 6270-35 electronic page printer, operates at speeds up to 18,000 lpm.



Pertec's D8000 8-inch fixed disc has a capacity of up to 20 Mbytes. It is small enough to slot into the same space as a floppy disc drive.



Harris has added the 5880 and 5870 to its 5800 range of small business systems. The 5880 can support up to 96 terminals and the 5870 up to 128 interactive terminals.



## One Day Conference, 12 July 1979 Wembley Conference Centre

Tomorrow's office will incorporate communicating image and word processors; intelligent copiers, high capacity electronic filing systems and on-line information access from both internal and external databases.

If an organisation is to take full advantage of the most significant changes since the industrial revolution, the views and information presented by an exceptional panel of speakers from both sides of the Atlantic will be of vital importance.

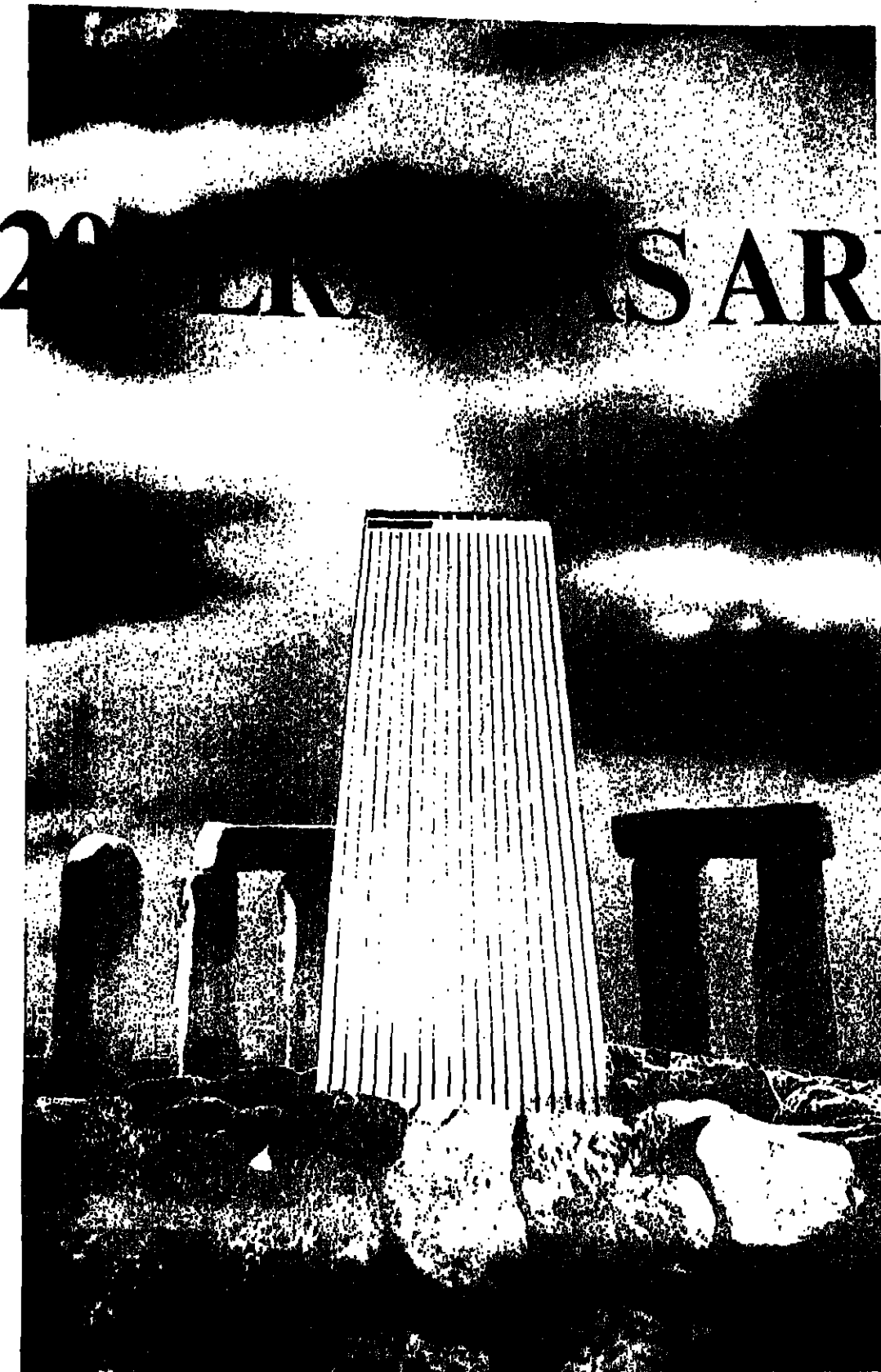
This event, together with a one day conference entitled The People Factor, and eight half-day seminars forms part of the INTERNATIONAL WORD PROCESSING EXHIBITION AND CONFERENCE.



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# THE 3200 TEAM IS ARRIVED



Perkin-Elmer opens the next chapter in computing history. With the introduction of the Model 3220 — first processor in the new Series 3200 — the second generation of SUPERMINIS makes its historic UK debut.

## Highest Performance

Perkin-Elmer introduced the world's first 32-bit SUPERMINI in 1973. Now, with a background of over six years practical experience from more than 2000 installed systems worldwide, the second generation Series 3200 arrives as other manufacturers are just launching their first.

The Model 3220 has full 32-bit architecture, a data transfer rate of 8Mb/sec, MOS memory in 256Kb modules up to an ultimate 4Mb, memory error logging down to chip level, cache memory and 128 32-bit registers.

## Lowest Cost

With all these features and many more, the Model 3220 costs less than many currently available 16-bit systems, a major cost breakthrough. For the first time, this brings within economic reach of a wide range of users the speed, accuracy, power and I/O handling capacity normally associated with 'mainframe' computers.

## Mature Software

To match the most advanced hardware, Perkin-Elmer 32-bit software has been refined and proven where it counts — in the field. This powerful software includes OS/32, a real-time, multi-tasking operating system, together with a host of language processors and utilities, including COBOL, globally optimising FORTRAN

VII, BASIC, CORAL66, ITC transaction monitor and OS/MTM for multi-terminal program development facilities.

## The 3200 Team

Perkin-Elmer, a Fortune 500 company, is world-renowned as a major manufacturer of high-technology optical, instrumentation and data processing products. The Model 3220 SUPERMINI is the latest evolution in the company's commitment to industry leadership and innovation. It is backed by years of field experience, fully-proven software and a team of dedicated professionals committed to making your installation a success.

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# Cook's wins tour to Crystal Palace

TRAVEL bureau Thomas Cook left its rivals way behind in the Mens section of the East Anglian heat of Computastars on Sunday.

Held at the Cambridge University Athletic Club's grounds, organiser Gordon Cairns said that it was the friendliest heat he had been to. Cook's, with 153 points, will be joined at the Palace by Providential Mutual Life who only beat the former's Ladies team by 0.33 of a point.

This it got thanks to J. Evans who came first in all her events bar the steeplechase when she came rather near the end. She also won the individual events. In the team events, after grabbing the lead in the cricket ball throwing competition, Providential Mutual looked like being easy winners. Cook's fought back hard but failed to grab a share in the honours by a fraction of a point.

In the Mens individual events, Paul Bownes, a Cook's programming team leader, put up a tremendous fight and was as-



Allen Computers and J. H. Minet were so close Organiser Cairns decided to allow them both through to the final.

## TEAMS

Allen Computers, North London; British Steel Corp, Scunthorpe; Thomas Cook, Peterborough; Data General, North London; Eastern Counties Newspapers, Norwich; GEC Computers, Borehamwood; J. H. Minet & Co, Woodford; Northants County Council, Northampton; Norwich Union, Norwich; Providential Mutual Life; and Roneo Vickers, Ilford

## RESULTS

Mens team events — 1. Thomas Cook 1, 153 points; 2. BSC 118.5; 3. Norwich Union, 104; 4. J. H. Minet, 103.5; 5. Eastern Counties Newspapers, 98; 6. Providential Mutual, 95.5; 7. GEC Computers 1, 91; Northants C.C., 91 (joint placings); and 8. Data General, 84.5

Mens individual events — 1. Paul Bownes, Thomas Cook 1, 40.5 points; 2. J. Thorton, GEC Computers 1, 36; and 3. Robert Jones, BSC, 29

Mens secondary competition — 1. Allen Computers, 621 minutes; and 2. Roneo Vickers 1, 624.

Ladies team events — 1. Providential Mutual, 74 points; 2. Thomas Cook, 73.67; 3. Norwich Union, 71; and 4. GEC Computers, 68.16; BSC, 68.16 (joint placings)

Ladies individual events — 1. J. Evans, Providential Mutual, 44; 2. Roneo Vickers, Thomas Cook, 43; and 3. J. Fiddling, GEC Computers, 39



ABOVE — winners of the Mens event was Thomas Cook 1 who "borrowed" a company flag in celebration of success. Holding the trophy is Paul Bownes, who won the individual competition.



LEFT — causing as much excitement as the steeplechase events was the secondary competition which consisted of a tug-of-war over an obstacle course. Here, a Roneo Vickers man taking the beam.

BELOW — adding to the excitement was the Ladies team events winner, Providential Mutual Life. On the left J. Evans who won the individual events.



## SOFTWARE TRENDS

# Giving users more 'friendly' access

ON a crude analysis, there are approximately 800 IBM 360 or 370 computers in the UK. If the average number of discs on these computers is put conservatively at four and the capacity of each is 70 Megabytes, the total amount of data held is approaching 250 Gigabytes.

Assuming that there is three times as much data on tape as on disc the total is 1,000 Gigabytes of data on IBM machines alone, which constitute only some 30% of the UK computer population. So in all there is probably at least 3,000 Gigabytes of computer-held data in the UK today — or 50K bytes per head of population.

However inaccurate the above analysis may be, the orders of magnitude are correct. The sheer scale of the modern reliance on computers is awe-inspiring.

How could a large bank, for instance, possibly hope to do the amount of business in the speed required to have viable cashflow, without computers?

Even the most humble companies are becoming increasingly reliant on this ubiquitous machine.

But all this is fairly recent. Even 10 years ago the figures would probably have been only about 1 Kilobyte per head.

This "information revolution"

has been accompanied by changes in the conventional ways of accessing data.

In the Sixties data processing was strictly the province of experts. The user was merely consulted on the data contents, and on what specific reports were needed. After that the data processing departments took over and did all the work.

Easytrieve, we entered the era of "user friendly" reporters.

These generators have an English-like syntax, are used daily throughout industry and enable the users to access and report on data with the minimum of processing training.

With the second generation tools, assuming a user can discover which file or database

syntax for the user to correct as necessary.

This whole process can continue until a mutually satisfactory definition of the problem is reached.

Thus the user inputs his request:  
**PLEASE PRINT NAMES OF ALL EMPLOYEES IN SOUTHERN SPAIN**

## By Michael Powell

This led to user frustration because of the difficulty of providing ad hoc information on a timely basis. So the first report generators came about; languages like RPG and Mark IV gave a simply coded access to data which would enable the experienced programmer to be far more productive and responsive to user needs.

Mark IV and RPG could be described as the first generation of report generators. Their fundamental disadvantages were that users were required to fill in a number of pre-printed forms and the systems were in no way English-like.

With the introduction of the second generation of report generators, and products like

holds his data, the world is his oyster.

But even the most sophisticated and English-like systems suffer from the unnatural way in which they operate. It is still not possible to carry out a true man/machine conversation. The few attempts there have been to do this have proved impossibly costly to run.

Now, however, with what were 10 years ago considered huge machines coming onto the marketplace and processing costs tumbling, a whole new generation of tools is possible.

The way forward is now open to dialogue systems, where the user puts in his request and the machine attempts to interpret it, returning its interpretation in its

The machine, recognising NAMES and EMPLOYEES asks:

DO YOU WANT THE PERSONNEL FILE?

The user replies: YES  
After more such questions and answers the result is:

FILE PERSONNEL  
IF REGION = 5  
LIST NAME

The problem definition has thus been converted into a high level syntax from which the machine can generate the desired information.

Notice that the user's problem is redefined in an English-like way, in this case using Easy-

trieve. Thus the user can edit the resulting program at will, without the need to understand the intricacies of the syntax.

Naturally, in practice this requires a dictionary capability and a fair degree of syntactic understanding by the machine, but the pay-off is that an untrained user can use the machine both to help him define exactly what his problem means and to create an effective solution.

This then is the key to the whole discussion. Not only does the problem have to be turned into a computer acceptable program, but it also needs to be properly defined to the user himself.

In this way the danger of producing a completely wrong report because of a misunderstanding by the programmer or analyst can be averted, and valuable man hours saved.

This is a personal view of the direction which the access of data will take. Whatever happens, one thing is sure. All those Gigabytes of data will continue to grow, as will the need for more effective means of accessing it.

Products like Easytrieve, the second generation of ad hoc reporters, will be refined until the user can really say: "Now you're speaking my language!"



Powell

A RECENT estimate put the shortage of programmers in the UK at around 20,000. And the explosive growth in computer ownership is likely to widen still further the gap between supply and demand.

In this first article, Michael Powell, regional sales manager for Pan-sophic Systems in the UK, gives a personal view of the effects of the "information revolution" on the tools used to access data.

He argues that improved price/performance will open the way to a new generation of "intelligent" software tools, which will lead to even higher programmer productivity as well as giving end-users more "friendly" access to computer-held information.

# Managers' guide to planning a database

DATABASE software has now been installed on more than 1,000 machines with most mainframes or large minis supporting at least one database package.

The technology of databases has thus passed the pioneering stage, and the principles have now been understood, at least in general terms, by most data processing practitioners.

The questions which managers will want to have answered at this stage include: are databases worthwhile for us; for what applications; which software packages should be considered; what broad systems, software, and design strategies should be followed in intended projects; and, what are the correct priorities for different applications?

The first problem encountered by any manager comparing databases with conventional file based systems is that his staff may have limited or no experience in evaluating or using such techniques.

For this reason I have concentrated in this article on planning the study project. Such initial planning is crucial in defining the elements and therefore the usefulness of the whole study project.

What is database planning? Obviously the answer will differ for each installation, but in general it would have to include deciding whether the study

ALTHOUGH database management systems have now been available for over 10 years, many installations have yet to take their first steps with the technology. One critical problem is the evaluation of potential benefits in the absence of relevant database skills and experience.

In this article, DAVID TEBBS, managing director of BIS Applied Systems, provides a management guide to the initial planning of a database study, and discusses the major elements of the study itself. He pays particular attention to the need for comprehensive planning at an early stage.

database techniques; determining a strategy for the development of database systems; and selecting database projects.

Over the past seven years, experience in several successful studies and the review of results of less successful studies has shown us a common pattern.

In broad terms, a database study is no different from any other study, but our experience has identified techniques that should be used and details that must be considered.

In management terms the first step is to set the overall plan for the study. This step is concerned with setting the constraints and objectives of the study; training; and, planning the study itself.

Unless this first step is carefully considered, the chances of being able to evaluate the usefulness and profitability of database at the end of the project are low.

One reason why we stress this phase is that it is often the

often follow when it is omitted. It is not uncommon for a consultancy to be asked: "Can you please review the recommendation I have received from my staff on databases?" Or, "We are having some difficulty with our study, can you assist?"

When this arises, we often find that although the team have tackled the job well, given their prior experience, key issues have been missed.

This is the result of their lack of use of relevant database techniques, and the omission of some of the relevant database study tests.

As already mentioned, the first major obstacle to be overcome is how to proceed when staff have no in-depth experience of database projects.

Some preparation will be required and managers will wish to establish fundamental principles

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£5,500 plus mortgage facility, Central Lancs. No maintenance, all development on IBM.

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£4,000-£6,500, Lancs. ICL 2904 COBOL on-line environment. Excellent relocation, to £8,000.

We have vacancies in Manchester for IBM, DEC, ICL and in Liverpool IBM and HONEYWELL experience.

Please send further details and application form.

NAME: .....

ADDRESS: .....

TELEPHONE: HOME .....

OFFICE .....

(used discreetly)

You will have seen the many special projects advertised by us for specific clients. In case you missed the main advertisements, here is a selection of some current vacancies, for which interviews are taking place.

There are many other excellent positions available which cannot be shown through lack of space. Why not telephone our office or clip the coupon.

Positions open to male & female applicants, please telephone (24-hour service) for initial discussion or write to address below. QUOTE REF. CW149-9P

## S.P.S. Support Ltd.

Systems and Programming Services

## MIDLANDS

★ SALARIES TO £8,000

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SENIOR PROGRAMMERS

S.P. Support is an established Software-House, a member of CSA, with a first-class reputation gained by employing very experienced people with not only the highest technical skills and a professional approach to their work but also the ability to blend in, and communicate well, with all levels of staff.

We now need further expertise in the following areas:

1. PL1 AND COBOL
2. REAL-TIME OR DATABASE APPLICATIONS
3. CONSULTANCY
4. SYSTEMS DESIGN (TAILOR-MADE OR PACKAGE)
5. VENTEK'S DATAPOINT AND OTHER MINI-COMPUTERS

If you have experience in any of the above and would now like to further your skills on mainframe and minicomputer projects, or would like to know more about the Software House environment, then why not contact us for an informal chat.

Outside Office Hours, telephone:



Computing Services Association  
ALAN MYNARD  
MALCOLM RYE  
MIKE COLLINS  
NUNEATON (0682) 328710  
NOTTINGHAM (0602) 843079  
BURTON (0283) 760774

St. Martin's House  
Bull Ring  
Birmingham  
B5 5DT  
Tel. 021-632 4304

## FORTAN

## PROGRAMMER

PRODUCTION ENGINEERING - SUSSEX

The APV Co. Ltd., Crawley, Sussex, is the H.Q. of a highly successful international group engaged in the design and manufacture of process plant for the dairy, brewery and chemical industries.

A vacancy exists for a programmer to work with engineers in the development of machine tools designed to assist in detailed planning and manufacture of component parts. It offers an opportunity to become involved in forward thinking production engineering when the need to computerise engineering is being acknowledged.

In house computers include a Prime 500 and Dec 1170 using Fortran. Ideally applicants will have two years programming experience and an interest in engineering. An attractive salary and benefits package + relocation expenses if appropriate is offered.

Contact: Pat Rodden  
ATA COMPUTER RECRUITMENT  
38 The Broadway, Crawley, Sussex

UNIVERSITY OF WARWICK  
PROGRAMMERS

Applications are invited for two

posts of Programmer in the Com-

puter Unit, which provides ser-

vices for the whole University.

These posts involve both advisory

work and software development.

Specialisation in areas such as

microprocessor applications, net-

work development, statistical

software and finite element soft-

ware is also encouraged. Avail-

able hardware include a dual

processor Burroughs 6700 system.

Applicants should have a

degree or equivalent qualification

and some relevant experience.

Initial salary will be at a point

within one of the incremental

scales: IB £3,650-£6,231 p.a. or

JA £4,232-£7,145 p.a. or excep-

tionally, within the Grade II scale

£5,627-£8,452 p.a.

Further particulars and applica-

tions forms available from the

Secretary and Registrar, Univer-

sity of Warwick, Coventry CV4

7AL, quoting Ref. No. 4478/79.

Closing date for receipt of appli-

cations is 28th June 1979.

UNIVERSITY OF DUNDEE  
COMPUTING CENTRE

Applications are invited for the post of

SYSTEMS

PROGRAMMER

The Centre provides a service to the University

through its Department of Computing. The University

is a member of the BCS network, and the

Department of Computing is a member of the

Scottish Universities Computer Council.

The applicant should preferably have some

previous knowledge of computer systems and

experience in the use of a computer.

The applicant should also have a degree or

equivalent qualification and some relevant

experience. The salary will be in the range

£5,627-£8,452 p.a. Further particulars and

applications forms available from the

Secretary and Registrar, University of

Dundee, Dundee DD1 1TA, quoting Ref. No.

4478/79. Closing date for receipt of appli-

cations is 28th June 1979.

MYRIAD  
PROGRAMMERS-  
PROGRESS

N.W. LONDON

c £6500

Our client, a very successful manufacturing organisation maintaining an impressive growth rate over recent years is now planning to develop a variety of major systems.

Using the computing facilities of a medium range IBM computer, exciting opportunities now exist for programmers with a minimum eighteen months commercial experience to progress their careers into analysis. Joining a young enterprising team of professionals, successful applicants will be encouraged to contribute effectively to the design and specification of projects as well as the programming effort.

Ideal candidates will be able to offer good commercial programming experience supported by the desire and potential to advance into an analytical role. After induction to the company's commercial procedures and awareness of the data processing standards adhered to, every opportunity will be afforded to applicants to apply their skills in developing systems from broad concepts already planned.

A range of company benefits are associated with these vacancies further enhancing the opportunities available to the career minded professional.

Ref N2/1406

## MYRIAD APPOINTMENTS LIMITED

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A Strong Systems or Programming Background (preferably in an ICL environment) could involve you in a wide variety of projects throughout Europe with a large software house. Based in the U.K. you will undertake short/long term assignments overseas which could be of a System Development or a Pre and Post Sales nature. Database or T.P. experience would be useful.

CONTACT ROLAND JONES on 01-603 7335 quoting Ref. RJ 2001



Information Processing People  
58 Pembroke Road, London W8 Telephone 01-603 7335/6 Telex: 261298  
Computer Services & Recruitment Consultants

## Management Services Manager

JCB, Europe's leading manufacturer of earthmoving equipment, require a data processing manager. His/her responsibility will be to control a department embarking on an ambitious 3 year Development and Implementation Plan.

The D.P. development will be centred around two large Honeywell Ltd. DPM Systems with a communications network encompassing all areas of the group.

The successful applicant will possess a demonstrable record of achievement in a similar position, preferably in the computer industry, and an ability to motivate and control all levels of staff in a fast moving and changing environment.

Attractive conditions including generous salary, excellent fringe benefits and relocation expenses to a large area in North Staffordshire. Phone space will be a bonus. A full range of facilities will be provided.

Further particulars may be obtained from The Secretary, The Works, JCB Ltd, 100000, with whom applications, enclosing details of experience and references, should be sent. The successful candidate will be invited for an interview.

Applications should be sent to: The Secretary, The Works, JCB Ltd, 100000, with whom applications, enclosing details of experience and references, should be sent. The successful candidate will be invited for an interview.

Applications should be sent to: The Secretary, The Works, JCB Ltd, 100000, with whom applications, enclosing details of experience and references, should be sent. The successful candidate will be invited for an interview.

## JBA

## Technical Support Manager

Europe £17,000 - £25,000  
Permanent senior position which involves technical liaison and support between the Marketing Centre of an international manufacturer of Information Systems and subsidiary companies (including distributors). The appointee will assume conventional management responsibilities and have product managers and technical consultants reporting to him/her. Applicants must be mature, degree educated and have at least six years S/V engineering experience with mini-computers and FORTRAN-based applications. Also at least two years management of a support or project development group. Full Spec. available on application.  
Excellent prospects, salary and relocation package. Contact: Mike Creamer

## MVS Expertise

Germany from £18,000  
Our client has an urgent need for very experienced MVS specialists, especially if this is supplemented by recent involvement with communication access methods (TCAM, VTAM, BIFM, etc.). The successful candidates will enjoy consultancy status on a progressive development project, involving the creation of a large network system comprising powerful mainframes and d.c. architecture. The project will continue for at least one year and continuation at this level on similar experience-building projects is assured.  
Tremendous salary and employment package is offered. Contact: Mike Creamer

## NEW YORK

## Programmers

\$17,000 - \$25,000  
Interviews are being held in London by this well known American software-house during the week 18th-22nd June for experienced IBM OS programmers. Candidates must have experience of BAL or COBOL and have worked on Financial, Banking, Insurance or Stockbroking applications - and be able to describe the projects lucidly and clearly.  
The company is sound, with a \$5-6 million turnover and is already going through the process of arranging visas.  
IMS, CICS and JCL experience is a definite plus.  
Contact: Andy Wright or Mike Creamer

For further information on any of the above vacancies, please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants,  
16 Maddox Street, London W.1 Tel: 01-491 4478

## Real-Time Systems Designers

Lake District up to £6,750  
Our client, a large scientific organisation and a world leader in their own field, has a vacancy for a real-time mini-computer specialist to design and implement systems in data acquisition, process control and industrial automation within their research and production facility. Applicants should have at least two years experience on the development of industrial real-time applications preferably using PDP11's and RSN-11M, or similar. A degree in Maths, Physics, Control Engineering or other sciences would 'normally' be expected. Knowledge of instrumentation or data-communications would be an asset.  
Salary according to experience. Above average benefits including relocation assistance, help with housing and special allowances. Contact: Jim Baker

## Programmers - Industrial Systems

Berkshire up to £6,500  
A well established and highly successful group, part of a large British organisation, are expanding to cope with the increase in the business of specialised real-time systems, including the development of a sophisticated distributed mini/micro system. Candidates should have at least one year's programming experience using CORAL, RTL/2 Assembler or other similar languages in a real-time environment. A knowledge of PDP11's, HP or micros would be an asset. Excellent salaries, large company benefits and the opportunity to work with professionals on new technology applications. Contact: Jim Baker

## Junior Programmers

East London to £5,250 + bonus  
Our client, a well known company in the music publishing business, are about to install a new IBM 370/125. As a result of this major expansion, they are able to offer programmers with at least 12 months experience outstanding opportunities to work on development projects. Desirable experience is a commercial background with programming in COBOL, BASIC + or RPG2, preferably on the System 3 range. The company are dedicated to training staff in advanced programming techniques, so good career prospects are available for those who will contribute and enhance the professional reputation and expertise of the group. Excellent salary and employment package is offered. Contact: Margaret Stevens

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& OPERATORS

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## PRESTON POLYTECHNIC

Applications are invited for the post of

TEMPORARY LECTURER II  
in COMPUTING

The appointment is for one year commencing in September 1979. Duties involve the teaching of computer programming and data processing or computing science. Salary scale (under review) £4101-£6588.

Application forms and further particulars may be obtained from the Personnel Officer, Preston Polytechnic, Corporation Street, Preston PR1 2YQ, to whom completed applications should be returned within 14 days from the appearance of this advertisement.

Did you hear  
about the  
programmer.

who got bugged by his boss?  
Over 70 companies did.

Whether you want to change jobs or just stay in touch with the best opportunities, we're free. We're totally confidential. And we have contact with senior management in over 3,000 companies.  
Post this coupon today for our explanatory brochure and summary form. Lansdowne Appointments Register, Design House, The Mall, London W5 5LS. Tel: 01-579 2282 (24 hour answering service).

Our clients are keen to meet men and women, aged 20-40 years, with potential earnings of between £4,000 and £7,500 p.a.

Name .....  
Address .....

Lansdowne Appointments Register,  
Design House, The Mall, London W5 5LS.  
Tel: 01-579 2282 (24 hour answering service)

Lansdowne

Careers in Canada  
Software Specialists  
microcomputer-based office machines

AES is a world leader in the design, manufacture and distribution of "state of the art" word processing systems. In five short years we have grown from a handful of people and one prototype to our present status of over fifteen hundred employees with thousands of units placed world-wide.

We are a young, dynamic and aggressive organisation with great plans for the future. To help us reach our objectives, we need accomplished Programmer/Analysts at the Intermediate and Senior levels who are familiar with at least two of the following: on-line/real-time systems software... memory/file management... operating systems... communications systems... higher level languages/translators/emulators... and software quality assurance.

Working at the leading edge of available technology, you will be based at our Ontario Divisional Offices in Mississauga, Ontario - just west of Toronto - and will participate in the design of systems for office environments.

For qualified individuals we are prepared to offer:

- \* competitive North American salary scales
- \* excellent benefit package including life and disability insurance plus dental and prescription drug plans
- \* generous re-location allowance
- \* assistance with immigration to Canada
- \* outstanding career prospects in either managerial or technical specialties

In addition to the above, Toronto offers housing, education and recreational activities, which are among the best in North America.

If you are at all interested in exploring these unique employment opportunities send your detailed resumé in confidence, quoting ref. FY 1286, to: C.J. Gordon, Manager Human Resources, at the address below. Interviews will be conducted within the next six weeks in the U.K.

ASL, 17 Stratton Street, London W1X 8DB.

AES

"The Office of  
Tomorrow - Today"



£10k+Appointments £10k+Appointments £10k+Appointments

## The micro revolution don't watch it - sell it

Everyone's talking about the microprocessor revolution, and the impact it will have on the computer industry and every other branch of almost every other industry. But at Software Sciences Micrologic, we're not content to sit on the sidelines of the biggest revolution in computing since the electronic computer itself.

We are already a UK market leader for systems and equipment for commercial applications, such as point-of-sales terminals, bulk delivery invoicing and foreign exchange. Our experience in micro applications is based on our own in-house design and build capability, so that we can offer a complete solution to any microprocessor system requirement, both in terms of software and hardware. All of which puts us in an excellent position to profit from all the many and varied marketing opportunities which microprocessor technology has opened up.

And for you to profit from them as well.

We're looking for one or two people with systems sales experience to help us open up the micro systems market still further in London and the Home Counties. You won't necessarily need sales experience in micro systems, but you will need to have a broad general knowledge of computer systems and proven ability to identify and develop new market opportunities. You will need to display a creative approach in terms of new applications for our products, and to explain them to user management; and the self-discipline to organise a sizeable list of assignments on your own.

In return, you'll find real reward in material terms, and the equally important satisfaction of seeing your solutions being successfully put to practice.

If you're aware of what the micro revolution really has to offer in sales terms, please contact Esther Dye at our Farnborough Headquarters on (0252) 44321. Alternatively you may prefer to write to her at the following address: Software Sciences Limited, Abbey House, 282/292 Farnborough Road, Farnborough, Hants.

Microprocessor Sales

c. £12,000 Plus car

Home Counties

Software Sciences Limited  
Abbey House, 282/292 Farnborough Road,  
Farnborough, Hants GU14 7NB.

## Use your DP experience in recruitment

And earn around £10,000 plus car.

Our client, a professional recruitment consultancy operating internationally with a large, well-established client base, has an exceptional opportunity for someone with determination and commercial flair. You would join them as a consultant engaged in the selection and placement of DP personnel at a variety of levels. You will already have sound DP experience. But then you may have specialised in sales, systems or recruitment.

Handling complete recruitment assignments will be a comprehensive challenge to all of your abilities. You will help to sell the service, liaising with senior management, and follow with planned proposals for advertising right through to final selection of suitable candidates. Our client is highly growth oriented, and the same planned expansion which dictates the addition of another consultant will also yield many lucrative opportunities in the future.

Meanwhile you will earn basic salary plus commission giving potential earnings in excess of £10,000 a year, with a car and other benefits.

Write in confidence giving full details of your age, qualifications, career history and salary progression to date, stating the names of any organisations to whom your letter may not be sent, to:

T. L. Roberts, Director (Ref. 486)  
WHITES RECRUITMENT LIMITED  
72 Fleet Street, London EC4Y 1JS

**Whites**

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## Computer Professionals

Bahrain-Up to £11,600 p.a. currently tax free

- ★ End of Contract/End of Service Benefit also currently tax free
- ★ Free furnished accommodation and utilities
- ★ Paid home leave on completion of contract
- ★ Free Company primary schooling with generous education assistance for secondary education for eligible children
- ★ Excellent recreational facilities

The Bahrain Petroleum Company Limited, a large company in the oil industry, offers challenging opportunities in its rapidly developing Computer Services Department.

The Company has installed a 370/3031 with 3 megabyte core supporting batch and on-line systems. The data base is TOTAL with ENVIRON for its teleprocessing support. There is also a linked System 3/12 and a Fox 2/30 process control computer.

A wide variety of technical and commercial applications are already in use. Additionally, major areas of development are proceeding making use of real time, remote communication, and data base management techniques. Also a major study into the use of WANG word processors throughout the Company is currently taking place. To support the planned growth, the following personnel are required:

### Programmer - c £8,200 p.a.

Candidates should have a minimum of 2-3 years' COBOL experience in a 370 environment and a detailed knowledge of TOTAL and ENVIRON would be advantageous. The incumbent will be required to work from detailed specifications and must be able to produce good quality structured programmes within agreed timescales.

### Technical Systems Analyst - c £10,930 p.a.

The successful applicant will be a member of a small team which is responsible for the design, maintenance and user support of all technical and planning systems throughout the Company. Existing and planned projects include: critical path planning, replacement policy, refinery information, process control computer support, geological mapping and data analysis, financial modelling.

Members of the team are directly responsible for their projects, and are expected to promote the use of computer systems throughout the Company. The prime requirement for this position is a successful record in all stages of development and implementation of technical computer systems or Operational Research studies. Candidates should have a degree, HND or equivalent, in a numerical discipline. A knowledge of Operational Research techniques and statistical methods would be a distinct advantage.

### Operating Software Specialist - c £11,600 p.a.

Applicants must have significant experience in System 370; thorough knowledge of Assembler and OS/VS1 Internals and a sound knowledge of data communications. They must also have programming experience in COBOL and FORTRAN. The work involves generation and up-keep of the operating systems, maintaining system libraries, providing programming assistance to the Systems and Programming staff, and involvement in the development of data bases.

It is essential that candidates are self motivated and prepared to work with minimum supervision. Candidates should have a degree, HND or equivalent.

Employees live in Awali, the Company township in Bahrain. The town covers an area of nearly a square mile and provides homes, community services and recreational facilities for employees and their families.

Contracts are for one year renewable by mutual agreement. Free medical attention for employees and married or bachelor furnished accommodation provided.

Please send full personal details to:-

Personnel Relations Department,  
Caltex (U.K.) Limited,  
30 Old Burlington Street,  
London, W1X 2AR.  
Quoting reference CP/CW



## Internal Consultants

Computer Systems Audit/Security  
London based, to £10,500 + car

These vacancies arise through promotions within a function recognised as providing excellent and varied prospects of career advancement. Our client is a multinational manufacturer and distributor of business equipment and supplies. Successful candidates will be members of an internal consultancy team providing international management at all levels with a professional appraisal of operations methods and an assurance of the integrity of current systems. Candidates, probably 27-35, must be graduates with at least 3 years in EDP systems management, ideally with IBM equipment. A full understanding of business problems associated with large scale systems development is vital. For one of the vacancies experience of security technology is preferred. There is about 30% travel, mainly overseas.

N.P.S. Lilley, Ref: 22134/CW.

Male or female candidates should telephone in confidence for a Personal History Form to:  
LONDON: 01-734 6852, Sutherland House, 5/6 Argyle Street, W1E 6EZ.

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**UCCA**

The Universities Statistical Record

## DEPUTY SECRETARY

Applications are invited for this new senior post in the office of the Universities Central Council on Admissions at Cheltenham.

The person appointed will report to the Secretary who is responsible for both the admissions work and the statistical record, with appropriate delegation to a Deputy Secretary on each side.

Duties will include the management of the existing computerised records comprising staff and students in all U.K. universities and the development of new record systems; both involve close consultation with the universities, the University Grants Committee and other users.

It is expected that the person appointed will have had:  
a) professional data-processing experience, with some appreciation of the use of statistical data-collection methods; and  
b) substantial administrative experience, preferably within a university environment.

The appointment will be on Grade IV of the universities administrative salary scale (minimum currently £10,283 p.a.) with superannuation.

Preliminary enquiries marked PRIVATE AND CONFIDENTIAL should be sent to:

The Secretary, UCCA  
P.O. Box 28, Cheltenham, Glos, GL50 1HY

from whom further particulars and an application form may be obtained.

Closing date for applications: July 18, 1979

£10k+Appointments £10k+Appointments £10k+Appointments

Recruitment



In Informatics

# Programmers Designers Consultants

U.K. and Europe

Salaries: to £17K (Europe) to £10K (U.K.)

An internationally renowned supplier of Data-Base and Teleprocessing Management Systems has retained Logistix to identify top calibre DB/DC Programmer/Analysts, Designers & Systems Analysts, Consultants and Project Leaders, for its Belgian Head Office and U.K. Regional operations.

**THE COMPANY:** Our client is an established world-wide software organization with its Corporate Headquarters located in U.S.A. and its European Headquarters situated in Bruxelles, Belgium. With 2500 clients and over 8000 installed products it is recognized as one of the leading independent software companies in the world.

**THE CHALLENGE:** The company plans to continue its rapid growth rate and success story by diversifying into the areas of technical information processing consulting. This started one year ago and within the next two years they will need 100 additional professionals in Europe and U.K. alone. The challenge is available for those seeking an established industry leader, with financial stability and opportunities for rapid advancement because of a fast growth rate. Their philosophy is that "growth needs people and people need growth."

**THE PROJECTS:** Some of the Company's recent projects have included:

- \* Data-Base Production Control Systems.
- \* Turn-key applications and systems software development.
- \* Conversion to other DB/DC software.
- \* Implementation of warehousing distribution systems.
- \* Development of DB/DC Systems and Programming Standards.

The Company's involvement in projects ranges from planning or management through to the development of complete turn-key solutions. They are a very broad-based Consultancy operating in the entire market, solving problems by applying mainframe or mini-computer solutions.

**THE PEOPLE:** These very important positions will appeal to those:  
Who are underutilized in their current jobs.  
Who are worth more than they are currently earning.  
With an adventurous desire to travel and who want to be involved with a diversified menu of projects.

People with appropriate linguistic skills will be given opportunities to travel and even relocate to Europe. Those who have the desire to improve their knowledge of French, Dutch and German will be able to be based in the U.K., but have opportunities to work on projects on the Continent. Those wishing to remain in the U.K. will have an opportunity to live and work in one of the most picturesque areas of the Thames Valley. Even then, there will be ample opportunity for travel within the U.K. and overseas should it be desired. Suitable applicants should therefore offer in-depth IMS, DL/I, TOTAL, ENVIRON/I, CICS exposure or similar DB/DC experience.

### OPPORTUNITY PROFILES:

**Programmer/Analysts** with a minimum of 36 months applications programming experience with COBOL, PL/I or BAL in a mini-computer or mainframe environment working on commercial, financial or manufacturing projects. **Analysts/Designers** who have been involved in a feasibility study, the design and subsequent implementation of at least one complete system preferably in the areas of sales ordering, stock/inventory control, budgeting/forecasting, foreign exchange/investment and portfolio management. **Consultants and Project Leaders** who must demonstrate expertise in the areas of Project Planning, System Analysis and Design, "Top-Down" Development and Structured Programming techniques. **Consultants** who have the ability to act in a project-leader or project manager capacity will have a definite advantage.

**THE BENEFITS:** The higher than average salaries reflect the prominence which our client places in the acquisition of these key personnel. Additionally, extensive benefits include life and disability insurance, pension and medical plans, overseas allowances and liberal mileage allowances.

**YOUR NEXT STEP:** If you qualify please telephone or write immediately to arrange an initial interview in our London office. Successful candidates will be short listed to meet two of the Company's senior management who will visit our offices in July. Offers of employment will be made no later than 14 days after interview. It is hoped that for both U.K. and European positions appointments will be taken up in August/September.

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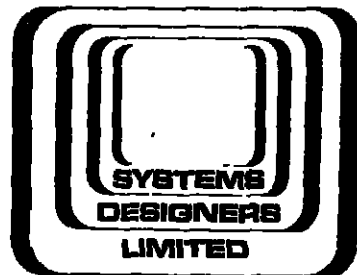


Telex: 28800

Ref: 1011/150



£10k+Appointments £10k+Appointments £10k+Appointments



Quality first

## Informal Interviews at our Head Office Pembroke Broadway Camberley

On Tuesday 19th June, 17.30-21.00 hours.

Systems Designers Limited needs computer professionals at all levels to work in very nearly every field of computer operation, not only in the UK but also in Europe, the Middle East and the USA. Although a large amount of work is centred around our Camberley, Frimley and Manchester Offices there are many long term projects which offer opportunities to see other countries throughout the world. Our continuing requirement is for staff at all levels. We are looking for final year graduates as well as experienced software and systems professionals. Salaries are negotiable up to £12,000 p.a. according to ability and experience. If you can meet the challenge of intellectually stimulating and varied work with a leading well-established software and systems consultancy specialising in mini and micro computer real-time applications, then please drop in for a drink and a chat with our managers and consultants. The office is adjacent to Camberley BR station. If you cannot make it, telephone Ann Gregory for an application form and further information about the company or write to: Bill Hockey, Operations Director, Systems Designers Limited, 1 Pembroke Broadway, Camberley, Surrey GU15 3XH. Telephone Camberley (0276) 82244.



Systems Designers Limited has an unrivalled reputation in modern computer technology as applied to mini and micro computers in real time environments. This reputation is resulting in a company wide expansion plan, which offers plenty of opportunity to the right people. We are British, independent, currently 200 strong and confident of a successful, exciting future.

Our principal work areas are currently:

**COMMUNICATIONS**  
Military communications procedures, voice, data and message network design, network management systems, message switching, telex and packet switching systems, computer communications protocols.

**INDUSTRIAL**  
Process control and monitoring, plant control simulation, high speed data analysis and distributed microprocessor systems.

**MILITARY**  
Modelling, avionics and radar systems, complex rigs, simulators, microprocessor missile systems and signal processing.

**SOFTWARE PRODUCTS**  
Compiler technology, software design techniques, MASCO and information processing systems, STATUS and VIEWDATA systems.

**VIEWDATA**  
International Viewdata Centre. Developments to support External Computers. New viewdata products for USA and Europe.

**CONSULTANCY**  
Project Management, software and system development technology, complex military systems and theoretical studies.

## £20,000 + p.a. Systems Analysts & Programmers VIENNA

Our client has recently won a £200-million contract to provide a radar and flight data processing system to cover the Austrian flight information region. The project is based on DEC computers using distributed real-time processing, communications and sophisticated peripherals. Several opportunities exist to join the team in Vienna in this absorbing and creative work. Contracts are for a minimum of 2 years and around 4-7 years real-time software experience is desirable. The package consists of a highly competitive salary together with attractive relocation conditions and such benefits as free education for children and free medical insurance.

### PERSONNEL ADVERTISING LIMITED

Please write, giving a brief career history to David Macmillan, Personnel Advertising Limited, 22 Red Lion Street, London WC1R 4PX. All replies will be sent forward to our client unless we are instructed otherwise. Please quote ref. GRS 538.

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PL1/CICS  
£400 per week

We are currently engaged in the development of a real time order entry system for a client in the Netherlands and require an experienced PL1/CICS programmer to join an existing team for an initial period of six months.

For further details please contact Brian Bidston during office hours (0734 791225) or evenings (03446 5385).

370 Software Support



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Our association with data processing covers approximately 14 years during which time considerable expansion within our Group of Companies has necessitated constant hardware and software enhancements.

The present configuration includes an IBM 370/158 3 m.b. processor and continued development in the areas of on-line and data base systems is planned for the 1980's when IBM 8100's, 4341, 4331 are planned for delivery.

As the computing facility for the entire Granada Group, comprising Television, TV Rental, Theatres, Motorway Services, Publishing, Properties, we have need to expand our department by 20% and are seeking applications from commercially biased individuals.

## SENIOR ANALYSTS & SYSTEMS ANALYSTS Starting salaries £6,500 - £8,250

Commercial systems experience is the prime requirement and since we cover a wide range of diverse applications, your experience could be of use in a number of areas.

Additionally, one vacancy exists in Manchester for an Analyst with on-line systems experience.

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You should be a fluent COBOL and/or PL/I Programmer. We are less concerned with the length of time you have been programming, more your degree of involvement and future potential and for those qualified individuals not wishing to have supervisory responsibility, we are prepared to reward you for your technical abilities alone.

Benefits include a salary directly related to your experience, continued training, comprehensive relocation package, flexitime, four weeks holiday, free life assurance, contributory pension scheme.

Please contact our Advising Consultant for further details: Andy Carter 021-236-3781 (24 hour answering service) or Lapworth (05643) 3272 (evenings and weekends).

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More and more people are turning to gas, and in order to provide them — and our existing 1.8 million customers — with the total service they demand, we're looking for the following ambitious, technically-oriented but business-minded men and women to upgrade and develop our sales, supplies, engineering, accounting and all associated support systems.

All these positions are the result of re-organisation and expansion, and their holders will have every opportunity to make a personal contribution to our continuous development programme. We promote from within wherever possible, and the main criterion for success is ability.

Salaries range from £5000 to £8400 plus a current self-financing productivity payment. Your income will be supported by a full range of benefits which include generous holidays (present arrangements honoured) pension/insurance scheme and an active sports and social club.

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ADP Network Services is an international company providing interactive computing services for managers and businessmen.

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The kind of people we need will have experience of:

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You must be able to conduct the installation of a customer's system from the pre-sales stage through to the commencement of live running and be able to lead other members of project teams.

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Ring: Bernard Edwards or Peter Pearce 01-637 1355 or write: Bernard Edwards, S & P Manager, ADP Network Services Limited, 2nd Floor, Peter House, St. Peter's Square, Oxford Street, Manchester M1 5AQ.

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Weal Tektronix UK Ltd., the British subsidiary of the American multinational, with a world-wide turnover in excess of 600 million dollars, are rapidly expanding and are anxious to hear from men and women with relevant experience in graphic terminals or associated computer products.

### Sales Executive O.E.M. £11,000+ with Car

This senior appointment is based in our Manchester office and calls for someone with a realistic, innovative attitude to selling. You will have at least two years' selling experience in the computer industry preferably, but not essentially, to O.E.M. customers.

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### CAD/CAM Sales Support Specialist c.£7,200 with Car

If you are a qualified professional with outstanding technical, administrative and commercial ability you will find this a challenging and diversified career opportunity in the fast expanding field of computer aided design and manufacture. You must have at least two years' experience in one or more of the following:

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O.E.M. Sales Support Specialist  
c.£7,200 with Car  
Based in Harpenden, you will assist our O.E.M. Sales Executives and their customers in the application of our graphic terminals and associated computer products. You will handle technical queries either by telephone, correspondence or on-site consultations and additionally assist at exhibitions, seminars and on training courses. You need to be a communicative, skilled Electronics Engineer with several years' digital and analogue experience and a degree level qualification.

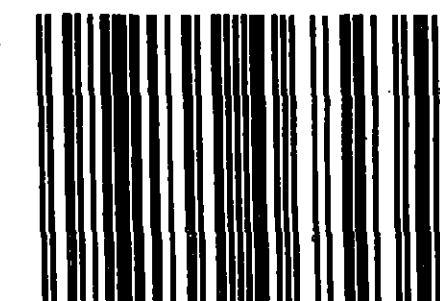
In return for your skills, additional to the above salaries, we offer many other big company benefits including generous holidays and sick pay scheme, free life assurance, non-contributory pension scheme, ample product training, relocation expenses where appropriate, and as an expanding company, a good career path.

Interested? Then phone Jim Rockall today on Harpenden (05827) 63141 for an application form, or write to him at Tektronix UK Ltd., Freeport, Harpenden, Herts AL5 4BR.

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Ideally with retail experience

## Senior Programmers and Programmers

With at least two years' IBM experience with COBOL or Assembler

The new retail computer technology is moving fast at Tesco where Electronic Point of Sale (EPOS) has been under extensive trial at our Wellingborough store for about a year.

Due to its success, we are now expanding the project. Our initial aim is to develop a system to link mini-computers in stores to our Head Office mainframe: the IBM 3032, complemented by the IBM 3680 Retail System and IBM 3680 Supermarket System.

To cope with the new demands of the project, we're increasing the team with a small number of men and women who feel they can work as well with retail problems as with pure DP ones. Thus you will be contributing substantially to the growth of a new technology that will undoubtedly revolutionise British retailing.

The environment is sophisticated and highly professional, the prospects excellent, the rewards very attractive. Salaries are above average and benefits include expenses for relocation to the Cheshunt area, where appropriate.

For more information about the new opportunities in EPOS with Tesco, please contact Fred Hayers, Tesco Stores Limited, Tesco House, Delamare Road, Cheshunt, Herts; EN8 9SL. Telephone: Waltham Cross 33222.

**TESCO**  
the new leaders...

see 11/14/79



## SALES EXECUTIVES TURN-KEY MINI COMPUTER SYSTEMS

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WEST AND SURROUNDING COUNTIES

ON QUOTA INCENTIVE PACKAGE TO £17,000  
(Basic salary £27,000 plus 2-litre company car)

Our clients, a major turn-key Systems House based in the Home Counties, are an autonomous subsidiary of a large manufacturing organisation. They are a rapidly expanding and well-respected supplier of turn-key mini computer systems and enjoy a substantial and impressive client base.

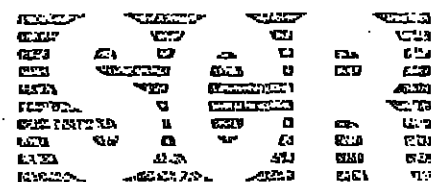
The company market excellent products in hardware and application package terms, coupled with above average technical support resources.

Candidates for these positions should have a proven sales record within the Mini Computer or Systems Sales Field, a sound business understanding and the motivation and determination to succeed.

In return, the company offers a stimulating working environment amongst a young professional sales force, a high base salary, on quota earnings to £17,000 and a flexible attitude towards first year guarantees. Other benefits include a 2-litre company car, and an organisational structure offering real career prospects.

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| POSITION                         | SALARY               | EMPLOYER                   | LOCATION             | HARDWARE ENVIRONMENT | SOME OF THE QUALIFICATIONS   | REF. NO. |
|----------------------------------|----------------------|----------------------------|----------------------|----------------------|--|----------|
| Systems Analysts                 | to £8,500            | Bureau                     | Kent/Middx           | ICL Mainframes       | Applicants with sound systems analysis experience are offered the opportunity to develop financial and manufacturing systems in a progressive user environment.                                    | 24/1     |
| Project Leaders                  | to £8,500 + bonus    | S/W House                  | Central London       | MINI/Mainframes      | Our clients offer opportunities for overseas assignments to top calibre staff with the ability to manage projects. A knowledge of COBOL or BASIC is a distinct advantage.                          | 24/2     |
| Analyst/Project Leaders          | c £8,500 + benefits  | Banking                    | City                 | IBM DOS              | A leading international bank offers systems analysts the opportunity to work in a progressive company developing DB/DC systems. Previous banking experience preferred.                             | 24/3     |
| Programmers and Analysts         | to £7,500 + benefits | Manufacturer               | Herts                | ICL 2803             | All levels of D.P. staff are required for this expanding department. COBOL is essential and a knowledge of GIL would be an advantage.  | 24/4     |
| D.P. Professionals               | to £7,250 + bonus    | S/W Consultancy            | London based         | IBM/ICL              | This well established international software house offers the opportunity to analysts and programmers with at least 2 years experience. COBOL and/or Assembler background on mainframes preferred. | 24/5     |
| Scientific/Technical             | £8,000+              | Manufacturing Services     | Surrey               | MINIS/Mainframes     | Scientific/technical programmers/designers with Assembler/Fortran/Coral are urgently required to work on advanced software/hardware real-time systems in a challenging environment.                | 24/6     |
| RPG II Analyst/Programmer        | to £7,500            | Distribution/Manufacturing | London Home Counties | IBM System 3 34, 32  | Excellent opportunities for ambitious RPG II programmers to work in a stimulating environment on a variety of commercial applications.   | 24/7     |
| Software/Scientific Programmers  | to £8,700            | Consultancy                | London               | Any                  | A unique opportunity to join a new division of a major international company. These positions are open to programmers with 3 years and Scientific/Software mathematical experience.                | 24/8     |
| Consultants/Analysts/Programmers | At Neg.              | Manufacturing              | Copenhagen           | NCR                  | Our clients offer one year contracts for first-class D.P. Professionals to develop a wide range of financial/manufacturing applications using NCR equipment.                                       | 24/9     |

## INFORMATIX UNITED KINGDOM AND OVERSEAS INDEX

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### Assistant to Data Processing Manager c £6500 (including bonus) S.E. London

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The present work involves manufacturing as well as comprehensive commercial and accounting applications run on an ICL 1901A configuration. The company is transferring its records to an ICL 2803 later this year.

The successful applicant will initially play a full part in the transfer/modification of the existing systems and will have a major responsibility for the development of applications throughout the company.

Candidates should possess sound COBOL experience and the ability to take system development through all phases to successful implementation.

For an application form, please write or telephone:  
The Personnel Department, Tunnel Refineries Limited, Thames Bank House, Tunnel Avenue, Greenwich, London, SE10 0PA. Tel: 01-858 3271.

**Tunnel Refineries Limited**

**FREELANCE PROGRAMMERS**  
We are seeking experienced freelance programmers for various projects. Please send your CV to: **Freelance Programmers Ltd**, 10, The Quadrant, London W1A 1AA.

**PROJECT MANAGER/BUSINESS ANALYST**  
We are seeking experienced project managers and business analysts for various projects. Please send your CV to: **Project Managers Ltd**, 10, The Quadrant, London W1A 1AA.

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Experienced Programmers or Analyst/Programmers will receive full system training. On-the-job and Batch work. Peter Benson. Ref: 302  
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Major Consultancy needs Analyst/Programmers with experience of Banking or General Commercial Applications. Bill Taylor. Ref: 303  
**DATA PROCESSING MANAGER S.W. LONDON** c. £8000  
Anal./Prog. to manage a small mainframe. Commercial systems. Cobol/Fortran. David Ward. Ref: 304  
**SALES PEOPLE ALL AREAS** c. £16,000 + car  
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**ENGINEERING MGR. (Designate) W. LONDON** to £7500  
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**PROGRAMMER CENTRAL LONDON** £6000  
Train to full Systems. Peter or David.  
**TELEPHONE: 01-839 6057**  
Peter Benson, Bill Taylor, David Ward  
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Computer Personnel Consultants  
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#### SUFFOLK COLLEGE OF HIGHER AND FURTHER EDUCATION

#### CHIEF COMPUTER OPERATOR

For application form and further details, please write to: **Chief Computer Operator**, Suffolk College of Higher and Further Education, 10, The Quadrant, London W1A 1AA.

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#### CHIEF PROGRAMMER

Suitable for a Senior Programmer with five years' experience of COBOL and PLAN. It is envisaged that suitable candidates will currently not be earning less than £8000.

#### ANALYST/PROGRAMMER

Minimum 2 years' experience of COBOL plus the ability to work on their own initiative are the requisites for this appointment.

The current configuration is a 98K 1901T with tapes and discs.

Northampton and the surrounding environment is a pleasant area in which to reside. Housing is reasonably priced and financial assistance will be given with relocation expenses.

Salaries for both positions are negotiable, will be based on experience and certainly above average.

To find out more, call us on Northampton (0454) 715500, or write to: **MR DAVIES**, **BYRON BARRATT SHOES LIMITED - BARRATT DIVISION**, **FOOTWEAR WORKS, NORTHAMPTON NN2 5EL**

## Systems Analyst/ Programmer (F14)

Salary to £6,018 p.a. (Award due July)

### Hemel Hempstead

The Commission is a statutory corporation responsible for the management and development of assets of new towns, and in the next few years will become one of the major commercial and industrial management bodies in the country. Computer services within the Commission are in the process of being expanded beyond an existing programme of financial applications, including the introduction of an estates management information system. The present computer installation consists of an ICL 1901T 32K, EDS 60's, and magnetic tape.

Applicants should have a sound knowledge of systems analysis and programming. The postholder, who will report to the Computer Manager, will have an important role in the development of computer services generally within the Commission.

The post is supernumerary and conditions of service include 37-hour working week with no shifts, approved relocation expenses and luncheon vouchers.

Application forms and further details can be obtained from the Chief Administrative Officer, Commission for the New Towns, Glen House, Stag Place, London, S.W.1 - Telephone 01-828 8831. Closing date: July 2, 1979.

### Commission for the new towns

## SALES EXECUTIVES

£7000 + Guarantee + Deluxe Car + Expenses

Dynamic growth mini-computer call urgently seeks sales men in London, Home Counties, Midlands and Scotland. If successful and hungry for more - on target £20K. Call now in strict confidence. Training provided for less experienced.

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## MANAGER COMPUTER OPERATIONS

We have been requested to assist our clients in South East London in the filling of the above position. The Company are a major firm in the construction industry with offices throughout the UK, Europe and the rest of the world.

The current installation consists of an ICL 2904 with RJE links to a large ICL mainframe with fourteen staff including operations, data control and data preparation.

Candidates should have at least five years' experience working with ICL hardware, preferably including 2904.

Knowledge of ICL 7020 and 7502 terminal operation and/or RJE facilities to ICL 1900 or 2900 together with George III would be an advantage.

Applicants should also be familiar with the control of the operations area including security, libraries, scheduling and the maintenance of standards.

The successful candidate can look forward to involvement in the development of new systems, liaison with user departments, dealing with technical staff and participation in the planning of future hardware enhancements.

An above average salary will be paid.

Conditions of employment are excellent and all that one would expect from a large international company and include BUPA, pension scheme, season ticket loan and subsidised restaurant.

Quote reference number L3265 for further details and an application form.

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Based at High Wycombe or one of our Regional Offices you will have the opportunity to travel throughout the U.K. Benefits include life insurance, B.U.P.A. membership etc. Please send your c.v. to, or request an application form from, R. Burgess quoting reference RB/CW/2331.

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One of the world's leading micro computer manufacturers currently enjoying an annual growth rate of 40% is about to launch its own service group. This new venture could be your opportunity to join a dynamic company, gain experience in wide range of industries and applications with prestige products. Start at £8,500, plus £4,600 towards the car of your choice plus many other benefits. If you are a service/customer engineer with good academic background/computer experience, live in London or Home Counties, then take a big stride to an exciting new career with excellent future prospects by calling today — but hurry!

Consultant's Ref: EK2137

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### University of Bradford COMPUTER OFFICER

(Ref. 85/COT/CW)

A three-year appointment for a graduate programmer to work on an input/output World Model and related tasks, including supervision of junior staff under the direction of the Professor of Economics. Salary within the range £4,232 to £7,145 plus superannuation, etc. Please write giving details of qualifications and experience to the Personnel Officer, University of Bradford, Richmond Road, Bradford BD7 1DP. Please quote reference, informal enquiries may be made direct to Professor J. A. Bottenley, telephone Bradford 33466 ext. 8/227.

## ADDS (UK) LTD

A subsidiary of Applied Digital Data Systems Inc.

## Sales Support Technical Supervisor

and

## System Support Supervisor

### A London Based opportunity to work in Europe

Applied Digital Data Systems (ADDS) is one of the world's leading manufacturers and suppliers of micro-processor based display terminals. A key element in the expansion of its already considerable European market is the creation of two new senior positions. The successful applicants will be directly involved in sales/technical or sales/system situations throughout Europe, dealing through an already established network of main distributors.

#### Qualifications

#### Sales Support Technical Supervisor — Europe

At least 2-3 years technical experience of micro-processor based terminal products or peripherals with the capability of understanding and advising both on software and hardware related program requirements. Previous involvement in pre-sales support situations would be a distinct advantage, preferably in the O.E.M. market.

#### System Support Supervisor — Europe

It is anticipated that the successful candidate will have good experience of applications software related to small business systems and preferably have relevant experience of floppy and/or fixed disk systems, Basic, Assembler and operating software. Knowledge of data communications would be desirable.

These are outstanding opportunities to secure key European positions in a company with an impressive growth rate.

They will involve frequent travel and will give extensive experience of the working of a European operation.

It is envisaged that total remuneration will be up to

**£8,500 p.a. + 2 litre Car**

Please contact Bernard Conn or Caroline Connabeer quoting reference ADD063.



**SMR Sales & Marketing Recruiters Ltd.,**  
Victory House, 99 Regent Street,  
London W1R 7HB,  
Telephone: 01 734 9776.

### UNIVERSITY OF LIVERPOOL

Department of Computational  
and Statistical Science

#### POST DOCTORAL SENIOR RESEARCH ASSISTANT

Applications are invited for the  
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to work under the supervision of  
Professor L. M. Davies on the  
numerical solution of integral  
equations. The project is funded  
by S.R.C. for two years from 1st  
September, 1979. Applicants  
should have, or shortly expect to  
obtain, a doctorate in numerical  
analysis or mathematically or-  
iented discipline.

The initial salary will be £4,232  
per annum.

Applications, together with the  
names of two referees should  
be received not later than 2nd  
July, 1979, by the Registrar,  
The University, P.O. Box 147,  
Liverpool L69 3BX, from  
whom further particulars may  
be obtained. Quote Ref. RV/  
642/CW.

## MIDLAND RECRUITMENT FEATURE



Advertisers are reminded that the next **Computer Weekly** area feature will be published on **June 21** and will highlight career opportunities in the Midlands.

Space reservations should be made as soon as possible to:

**Basil McGowan — Birmingham — 021-356 4838**

**Eddie Farrell — London — 01-261 8097**

Copy Deadline: PM Friday before

## COMPUTER WEEKLY

THE INDUSTRY'S WIDEST READ AND MOST REQUESTED NEWSPAPER

# datascene international

## IBM OPERATIONS — DAYS

Kent/London Borders to £5000

A large International organisation based in an easily accessible part of N.W. Kent is seeking to recruit experienced IBM personnel for their expanding Technical Support Department. A minimum of 12 months Operating or Data Control experience is required, preferably with some IBM OS JCL knowledge.

The installation utilises a Data 100 network linked to the company's main IBM 370/158 running under OS/VS1. The technical Support Department Operates a flexitime System and therefore this is an ideal opportunity for Operators to move from shift work into an interesting and demanding DAYS ONLY position.

There is a recognised company career path which includes the possibility of moving into programming in the future. Excellent staff benefits include discount on a wide range of products, staff restaurant, and an active sports and social club, one of the amenities being a swimming pool on site.

01.439 7871

Reference MH 24/1

## OTHER OPS

DATA 100 £7000

International Company based in Basingstoke require a Senior Op. Data 100 Exp preferred, OS JCL knowledge essential.

H.P. 3000 £4500

Experienced Operator, on any machine, required to take control of Computer room for Oxford Installation. Chance to learn Programming.

CMC REALITY £NEG

Any Mini or Mainframe experience for C. London Site. The right Applicant will be trained in Systems Programming and be expected to take control of the Computer Operation, when able.

BURROUGHS B6700 £5600

2-3 years Burroughs experience for this Senior Operations position. Junior Ops also required with 1 yr + Exp.

HONEYWELL 66 GCOS £4600

Large Installation requires Operators with 1 yr + exp. preferably Honeywell, but will look at other mainframes.

NCR B4 £5500

Various levels of Operators required by busy site shortly installing a powerful criterion.

NCR B1 to £4500

6 mths + NCR experience preferred for this day shift only site, salary according to age and experience.

UNIVAC £4000

South London Installation requires an Operator with 9 mths + experience, preferably on Univac Hardware.

## DATA CONTROLLERS

We have both Senior and Junior Data Control vacancies throughout London and the Home Counties. Below are just a few of our current requirements.

ICL GII/GII+ £6000

Supervisor with lots of GII/GII+ experience. 2 shifts S.W. London.

IBM OS £4400

9 months Op or data control exp. for City based company. Shifts.

ICL GII/GII+ £5200

2 yrs. GII experience for this 2 shift site in S.W. London.

UNIVAC £4000

Centrally based company requires lots of Univac knowledge.

IBM OS £4300

OS experience needed for 3 shift vacancy in North London. Opportunity to expand your JCL knowledge.

BURROUGHS £3500

Any D.P. background. DAYS ONLY. Surrey/London border.

ICL 2900 £3300

GII exp. pref. but not essential. West London. Flexi-time.

## ICL OPERATIONS

Essex/London Borders £4800-£5500

Chloride Automotive Batteries, a major British manufacturing company require an experienced SHIFT LEADER and OPERATOR to work at their Dagenham based installation.

The hardware currently consists of a 1902S running under GII, however, a 2950 is due to replace this machine towards the end of the year.

Applications for the Shift Leader post are invited from candidates age 24 or over with 2 years + GII Operating experience including knowledge of Macro writing, who should be either a senior Operator or shift leader at present.

For the Operator position applicants should have 12 mths + 1900 experience preferably using GII. Working a 2 shift system this is an ideal opportunity to join a professional operations team and to gain knowledge of the new ICL range.

Company benefits include Pension Scheme and Social Club, subsidised restaurant, paid overtime and company products discount.

01.439 7871

Reference MH 24/6

## IBM + ICL OPS

IBM 370 DOS VS £5400

Shift Leader required by N. London installation. Excellent perks include mortgage subsidy.

IBM 360 DOS VS £4500

Minimum of 12 mths DOS Exp for 2 shift working C. London Installation.

IBM 370 DOS VS £4500

6 mths + experience required by a variety of installations in C. London and the home counties.

IBM 370 OS VS1 £4600

City Bank requires an Operator with 6 mths + Experience Excellent Perks and fast promotion for the right applicant.

IBM SYS 3 £4600

Operator required by N. London Installation. Experience of SYS 3/15 preferred.

ICL 2900 £5000

Shift Leader required by small 2 shift working installation. 2 years + 1900 or 2900 experience necessary. Perks include Annual Bonus.

ICL 2980 £4000

1 years experience preferably on ICL equipment for this large City based Installation.

ICL 2980 £4500

City based Installation with newly installed 2980 requires an Operator with 1 year + 1900 or 2900 experience.

ICL 2900/1900 £4800

Large C. London site requires Operators with 12 mths + experience on any ICL equipment.

## CONTRACTS

### PROGRAMMERS & ANALYSTS

REGISTER NOW FOR IMMEDIATE & FORTHCOMING REQUIREMENTS THROUGHOUT

### LONDON \* U.K. \* EUROPE

DUE TO OUR CONTINUALLY CHANGING REQUIREMENTS WE ARE ALWAYS INTERESTED IN HEARING FROM COMPUTER PROFESSIONALS WITH A SOLID D.P. BACKGROUND TO WORK WITH MAJOR CLIENTS WHO ARE ALWAYS ABLE TO OFFER A WIDE VARIETY OF INTERESTING & CHALLENGING REQUIREMENTS.

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## ICL COBOL PROGRAMMERS

CITY to £7000

We have been retained by several companies operating a range of ICL installations covering all commercial applications who need programming staff at varying levels to continue their expansion programmes.

The benefits offered vary, but many include the valuable SUBSIDISED MORTGAGE.

So if you have a minimum of 12 MONTHS COBOL experience and are looking for a change, why not give us a call today.

Reference BP 24/2

## RPG2 PROGRAMMERS

CITY to £6500

A large computer service bureau with an expanding System 3 installation is seeking several programmers who would like to work on a wide range of different applications to expand on their current experience. The minimum requirement is just twelve months RPG 2 gained on any hardware.

The company offers all the usual fringe benefits, a very good starting salary plus the variety of work.

01-439 7871

Reference BP 24/3

## MICRO CONSULTANT

Central London to £9000 + car

A small but expanding Software House is currently seeking a Consultant to enhance their Mini/Micro division.

The ideal candidate will have a good knowledge of Micro Systems; aligned with good communication skills. An in-depth knowledge of Micro assembler is also required.

The company offers an excellent salary package coupled with a very good career path.

Reference HK 24/4

## SYSTEM ENGINEERS

North London to £7500 + car

A Multinational Hardware manufacturer is currently seeking System Engineers to enhance its software support group.

The ideal candidate would either currently be a Software Engineer or a programmer with good Mini or Micro experience who would like to get into System Engineering.

An excellent salary is provided with the additional benefit of a company car. So if you are looking for a position with a great future plus a great deal of client contact this could be the position you are looking for.

01-439 7871

Reference HK 24/5

## IBM COBOL PROGRAMMERS

Middlesex £6000 + 5% Mortgage

A large insurance group operating an IBM 370 Installation is seeking several programmers with a minimum of 18 MONTHS COBOL who are looking for a more dynamic environment where they can utilise and expand on their experience.

The Company offers an extremely good starting salary, £1 a day L.V.%, non contributory pension, car park, sports and social club, plus of course the 5% MORTGAGE!

Reference BP 24/7

## SYSTEMS ANALYST

City to £7500

A large shipping and insurance group is seeking a Systems Analyst to join their small and friendly team, which operates an expanding ICL installation, with a new machine arriving shortly.

The person they are seeking should have approximately three years analysis experience and possibly a programming background, although this is not essential.

The company offers excellent starting salaries together with extremely good fringe benefits including L.V.%, season ticket loans, BUPA etc.

01-439 7871

Reference BP 24/8

Datascene International Ltd. Telex: 25851

Sceptre House

169-173 Regent Street

London W1R 7FB

01-439 1856

Computer  
Association



# MYRIAD TRAINEE BUSINESS ANALYSTS

WEST LONDON AND CITY

c £5000

A rapidly expanding international organisation offering advanced software products is seeking additional staff at junior levels to join the Company and be trained as Business Analysts. The successful applicants will function in both a programming and design capacity and will have the opportunity of gaining experience with powerful database and financial software techniques.

Applicants will be educated to GCE 'A' level standard and have commercial data processing experience, ideally gained in a programming role. Personality and the ambition to succeed, rather than technical ability, is of prime importance to our client.

The Company offers an excellent starting salary plus bonus (c. 10%) and the opportunity of career progression within this rapidly expanding services organisation.

Ref: S1/1406

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y 1AA

01-353 0981 (24 HOURS)

## intel ONE PERSON EDP DEPARTMENT

Intel Corporation (U.K.) is one node of an international communications and processing network. Our operations have now expanded to a point where we require a DP specialist to take full responsibility for controlling the U.K. node, our first dedicated employee in the U.K. This activity will grow.

The candidate should have experience in the operation of RJE terminals, preferably DATA-100, and of communications with IBM processors. He/she will be personally responsible for the operation of the terminals, for the supervision of new equipment installation, for liaison with the European network centre in Brussels and will be expected to become familiar with the data entry and communications software running on the U.K. node. Intel's continued expansion will ensure a steady growth in the responsibilities and career possibilities of this position.

A good salary and matching conditions will be provided. Reply in the first instance to:

Mrs. Ann McGuire, Intel Corporation (UK) Limited, Broadfield House, 4 Between Towns Road, Cowley, Oxford OX4 3NB.

## Scientific Analyst/Programmer

London up to £6214

We are seeking an experienced Analyst/Programmer for our Communications and Instrumentation Department. The requirements are:

- ★ 2 years' experience of scientific or engineering computing
- ★ knowledge of a high level language, preferably FORTRAN
- ★ a degree or equivalent qualification

The computer system:

- ★ UNIVAC 1106, operating under OS1100
- ★ Interactive and batch terminal facilities.

Salary range £5335-£6214.

If this post interests you please ring David Pyatt on 01-831 6272 ext 4192 or write giving full details of age, experience, qualifications and current salary, quoting reference PS/616701(705)/CW, to the Senior Personnel Officer (Hinckley), British Gas, 59 Brynston Street, London W1A 2AZ.

BRITISH GAS

## BUREAU PROJECT CONTROLLER

circa £ 8500  
+ fringe benefits  
CITY

We are a well respected group of companies in the City of London. We require a Senior Data Controller, experienced in computer operations, preferably a service bureau environment, to join our expanding bureau division.

A person is needed who can carry a significant amount of responsibility for the smooth running of the day-to-day operations of the bureau and use his analytical experience to do a substantial amount of development work. This is usually new business, of which there is an increasing amount, in which the generalities of a signed contract have to be transformed into the specific functioning of each set of jobs in the bureau including programming and analytical specifications.

## INSTALLATION SUPERVISORS

circa £ 7500  
+ fringe benefits

The rapid expansion of the division is also producing the following vacancies

Two INSTALLATION SUPERVISORS are required to be responsible for individual clients' requirements of a variety of interactive accounting packages. The packages can be altered very simply to suit each client and then have to be installed into the customer's accounting routines to cause minimum upheaval. It will often be possible to act in a consultative capacity during these installations, so customer liaison must be close, and travel in the London area will be part of this interesting and varied work.

These posts offer an excellent starting salary in amicable surroundings plus really supervisory prospects, because you'll be getting in on the ground floor; as the company prospers, so will you.

If either of these posts is of interest to you, please telephone Winston Michael, Peter Robbins or Dudley van Tilon 248 5218.

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(SERVICES) LTD.

88 CARTER LANE,  
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## Senior Programmers

### Technical Support in Telecommunications and CAD

STC are heavily committed to the advanced use of computer systems in telephony and data transmission in the products themselves. In manufacturing processes including computer aided design, in their own management information systems and inter-company communications.

Very few organisations can provide programming professionals with such a wide range of hardware, software, applications and firm development plans. It's an opportunity you may not want to miss.

### Software Support Programmer

The company management information systems cover the U.K. and Europe with a Honeywell Dual 68/40 and current and planned additions of Honeywell Level 6, PDP, Data General and CMC Minis.

We need a minimum of 2 years' Honeywell mainframe experience preferably GMAP programming and some experience of software system evaluation is desirable.

You will form part of the Software Support Team supporting the 68/40 under GCOS providing a large timesharing and TDS network.

### Engineering Support Programmer

STC utilise CAD on a wide range of electronic, electrical and mechanical projects.

You should be either an Electronic Engineer with experience of computer systems, or a Programmer with a background in scientific packages for engineering users. One to two years' experience is the expected minimum.

You will work in a small team of Engineers and Programmers providing support to users of large CAD packages and producing CAD/Engineering systems for use under timesharing.

### On-line System Support Programmer

You must have 2 years' experience in programming in Algol - preferably on Data General RDOS systems - or RDOS experience in scientific programming.

The first task is to take part in a CAD related project on Data General equipment with a Technical Support Team, serving Engineering users and utilising several mini-computer systems on-line to the large Honeywell mainframe.

Subsequently you will retrain to support at least one other of these systems/applications. Areas - PDP11, RSX11/M, L8, GCOS8/TPS, Series 88GCOS/TDS, Data Communications SW Development Engineering/CAD Support.

### Working Conditions

These are senior programming positions, salaries will be negotiable, and will be adjusted on the basis of age, experience and expected contribution. The company has a wide range of benefits, including a pensions scheme, life medical, dental and optical services, relocation assistance etc. Location is on the edge of London/Herts, with excellent road and rail communications.

Please telephone for an application form or write with full details to Mr. R. Edmonds-Brown, Recruitment Department, Standard Telephones and Cables Limited, Oakleigh Road South, New Southgate, London N11 1HB. Tel: 01-368 1234 Ext. 2579.

## STC Changing the face of communications worldwide

## LORIAN NORTHWEST

DARWEN c £6500 + CAR  
PROJECT LEADER  
Our client is seeking a Senior Analyst, or Project Leader with large commercial systems experience. To take control of systems development. Mainframe and advanced mini-based systems.

OLDHAM to £4700  
COBOL PROGRAMMERS  
Young COBOL programmers with manual coding or commercial applications experience required to work on large TP and Database systems.

MANCHESTER to £7000  
PROJECT LEADER  
An ambitious Senior Analyst is required by our client with IBM hardware. Must have been systems manager to completion.

LIVERPOOL to £6500  
SYSTEMS PROGRAMMER  
A large multi-hardware organisation is seeking a Systems Programmer to provide technical support on TP machines. MUMPS experience an advantage, but not essential.

ST. HELENS to £6300  
IBM SENIOR ANALYST/PROGRAMMERS  
Senior Analyst/Programmers with sound IBM COBOL experience. Opportunity to work on major Database developments. CICS, TSO or ISVS experience would help but not mandatory.

PRESTON c £6000  
BUSINESS ANALYSTS  
Subsidiary company of major UK organisation requires young Analysts with both systems and business acumen. 18 months experience preferred. Well educated, less senior staff are acceptable.

LIVERPOOL c £6000  
TECHNICAL PROGRAMMER  
Our client is seeking an ICL New Pump, or ICL 1900 technical systems programmer to provide Software Support services to the group. Excellent opportunity to join go-ahead installation.

BURY c £4500 + Bonus  
COBOL PROGRAMMERS  
Manufacturing company with large IBM hardware are seeking additional programmers. Positions are ideal for staff wishing to make their first career change.

"If you're considering a move then you should contact Lorien first".

## LORIAN COMPUTER SERVICES

OCS House,  
Servia Road, Leeds LS7 1NJ  
Telephone 0532 444185

Recruitment  
Consultants(24 hour  
Answerphone service)

## Fareham Borough Council Borough Treasurer's Department Computer Programmer

Post T.48  
Salary grade AP.3/4 - £3,732-£4,632

The successful candidate will be responsible for the maintenance of a Honeywell Level 64/20 286K disks and tapes, running under GCOS with TDS facility and using TDS and IDS. Work includes development of new applications of both on-line and batch systems. Applicants must have at least two years' relevant experience and be competent in the use of COBOL. The commanding salary will be determined having regard to experience.

100% removal expenses. Up to £500 payable towards legal and estate agents fees plus generous disturbance and separation allowances. Flexible working hours. Temporary housing accommodation may also be available.

For application forms and further details write to the Personnel and Management Services Officer, Box No. 16, Fareham Borough Council, Civic Way, Fareham, Hants, PO16 7PP (Tel. Fareham 236100 Ext. 232). Closing date for receipt of applications 27th June, 1979.

## UMIST POST DOCTORAL FELLOWSHIP

Applications are invited for the above post in the Department of Computation on multi-microprocessor systems for telecommunications systems control. This Fellowship has been established through the support of the British Post Office.

The Fellow will have an opportunity to collaborate with Professor Aspinall of the Department of Computation and Dr. E. L. Hughes of the Department of Electrical Engineering and Electronics in the use of the CYBA-M, multi-microprocessor research environment to investigate fault tolerant systems for telecommunications systems control. The work will be carried out in collaboration with the Post Office Research Centre at Marlow Heath and the Fellow will have an opportunity to hold frequent discussions with research workers at the Post Office Research Centre and will be required to submit reports to the Post Office.

Salary is appropriate to age and experience and on the scale £4233-£7146 per annum.

Write for an application form, quoting reference COM/45/BC, to the Regional Office, UMIST, P.O. Box 88, Manchester M60 1UD, to whom they should be returned by 29th June, 1979.

## TESSIDE POLYTECHNIC COMPUTER CENTRE

Applications are invited to fill the following posts in the Polytechnic's Computer Centre. The Centre is currently implementing a powerful UNIVAC computing system with 1.2 Giga bytes of mass storage supporting over 80 interactive terminals. In addition the Centre is planning to implement a graphics laboratory housing a wide range of modern and sophisticated graphics equipment. At the end of these planned developments the Centre will be one of the most powerful computer installations in the British educational establishments.

### PROGRAMMER ANALYST or SENIOR PROGRAMMER ANALYST

P.C.U./11  
(Graphics and Communication)

To join a team which will be responsible for design and implementation of the software for the graphics laboratory. The successful candidate would also be able to take part in all developments concerning the Centre's communication network.

### PROGRAMMER ANALYST or SENIOR PROGRAMMER ANALYST

P.C.U./12  
(Operating System and Compilers)

To join a group of specialists in implementing and enhancing UNIVAC's most modern operating system, level 06 of EXEC-II.

### PROGRAMMER ANALYST or SENIOR PROGRAMMER ANALYST

P.C.U./13  
(Information and User Support)

To join a section with the challenging responsibility of providing information, documentation and training to the Polytechnic's large user population.

The Centre supports a wide range of programming languages and application packages. To the suitable candidates these posts offer excellent opportunities of both technical and professional development. Prospective graduates are welcome to apply.

Salaries, according to qualification and experience, will be on the following scale -

Programmer/Analyst £3420-£4761 + £312 supplement

Senior Programmer/Analyst £4920-£5748 + £312 supplement

(Both Salary scales are under cost of living review).

Informal enquiries may be made by phoning Middlesbrough 244179, Extension 12. Application forms and further particulars may be obtained from: The Personnel Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 3BA (Middlesbrough 244178), Extension 13.

## CAPITAL APPLIS.

FORTRAN  
Programmers urgently required for industrial and Scientific Development.  
£3000-£5000  
ALL AREAS  
Phone for free list of vacancies  
037 5557/44636 9659 616

## Bermuda

COBOL Programmer \$16000 tax-free

With some of the finest beaches in the world, temperate climate, English customs and excellent sporting and social life, Bermuda has a good deal to offer: couple this with a sound career opportunity, and the proposition is doubly attractive.

Our clients - the computer services wing of an insurance management company dealing with international clients - run a small but sophisticated NCR2600 installation using TP. In line with their plans to expand the services they provide, they are seeking a capable programmer who will play a key role in the design and implementation of new financial systems and who will be attracted by:

- Generous tax-free salary.
- 2-year extendible contract.
- Frequent salary reviews.
- Paid fares and accommodation assistance.

You should be single and in your twenties, with at least 2 years COBOL experience gained in a financial environment. You should have a sound knowledge of program specification and design techniques. As an important member of a small team, you must be self-motivated, analytical and able to accept responsibility for systems at an early stage.

For more details, telephone or write to Barry Latchford quoting ref. 2420.

Lloyd Chapman  
Associates

123, New Bond Street, London W1Y 0HR 01-499 7781

## Systems Analyst

An experienced Systems Analyst is required to take full responsibility for all systems development within a manufacturing company based in West Yorkshire.

There is already a considerable commitment to manufacturing systems with the emphasis being on on-line applications with some 15 screens throughout the company. The hardware is based on an IBM System 3, model 15D with 320Mb of disc storage.

A salary in the region of £5,700 per annum is envisaged and, if necessary, assistance with relocation can be made available.

Please write with full career details stating any companies to whom you do not wish your application forwarded, and quoting reference number 587 to:

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# Computer Servicing Saudi Arabia £16,350

If you have a C & G (or Service equivalent) plus five years' field or laboratory maintenance experience we can offer you an attractive two year contract including:

At least £16,350 tax free per contract.

Three paid leave periods annually with three free flights home to the UK.

Free bachelor accommodation, food and laundry.

Free medical care and life assurance.

Fill in the coupon with details of experience and send to the Senior Recruitment Executive (Lockheed), IAL, Personnel Consultancy, Aeradio House, Hayes Road, Southall, Middlesex. Telephone: 01-574 5006.

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Tel: \_\_\_\_\_  
Experience: \_\_\_\_\_



Ref: 267



## Holland, Germany, Ireland, Belgium, Switzerland and the U.K.

We have a first-class selection of permanent/contract opportunities throughout Europe.

Based in convenient locations throughout the above countries are a choice group of Blue Chip Companies offering excellent salaries and relocation +.

Individuals with good expertise in any of the following areas should apply immediately

- REAL-TIME COMPUTER SYSTEMS ● COMPUTER COMMUNICATIONS ● SCIENTIFIC/TECHNICAL
- COMMERCIAL BUSINESS SYSTEMS ● BASIC SOFTWARE DEVELOPMENT

For further details concerning these appointments please contact Eddie Howard

### COBOL 18 months + HOME COUNTIES

£ to 6,000

Our Client has been making headlines again with the successful launch of their new series 32 Bit Mini. As a leading computer manufacturer they are always seeking new talent and in this instance they require someone with good knowledge of a JCL or time sharing. It is important that candidates are self motivated and well presented as client contact is inevitable.

For further details please contact CW239.

### REAL-TIME PROGRAMMERS

**UK & OVERSEAS £ DEPENDENT ON LOCATION**  
Take advantage of our position as one of the leading recruitment specialists in the field of scientific programming. Today, more than ever, there is a demand for highly skilled personnel with the ability to tackle wide ranging projects in the design and development of scientific computer systems. If you hold a degree in a scientific discipline or have relevant practical experience of real-time mini computer systems, using either ASSEMBLER, BASIC+, MACRO 11, CORAL or FORTRAN, then give us a ring quoting ref. CW240.

## Edmund Howard & Partners

5 BRIGHTON ROAD, SURBITON, SURREY, ENGLAND. TEL: 01-399 8183

Computer Personnel Consultants

## ANALYST/PROGRAMMER

POWER STATION SIMULATION, LEEDS

Commencing Salary up to £5,300 p.a.

The North Eastern Region of the Central Electricity Generating Board designs Real Time Operator training simulators of power station plant at their premises in central Leeds. The simulators are for installation in Electricity Authorities both in the United Kingdom and throughout the world.

**IF YOU HAVE:**  
A sound working knowledge of FORTRAN.  
The ability to communicate effectively with engineers of other disciplines.  
A broad interest in engineering.

**WE ARE OFFERING:**  
"Hands-on" operation of a large mini-computer.  
Opportunities for home and international travel.  
The opportunity to broaden your knowledge and experience.  
The opportunity to develop your own ideas from concept to implementation.

The salary range progresses to £6,200

**HOW TO APPLY:** Please write giving brief details of qualifications, experience and salary to:



The Regional Personnel Manager,  
Central Electricity Generating Board,  
North Eastern Region, Beckwith Knowle,  
Oiley Road, Harrogate HG3 1PS.  
Quoting reference SYN/288/CW  
Applications should arrive not  
later than Friday 22 June 1979.

CENTRAL ELECTRICITY GENERATING BOARD - NORTH EASTERN REGION

## Two Senior Operators (T3/4)

BARKING PRECINCT

Housed to work within the Operations Group in the Computer Centre. The duties involve controlling the flow of work through the computer, interpreting and acting upon messages displayed by the operating systems, monitoring equipment for possible malfunction, and assisting in preparation of shift records.

Applicants should have attained at least OCE 'O' level standard education and have experience of ICL 1900 series computer.

The hours of work covering two shifts working are between 8.00 a.m. to 23.00 p.m. Incentive salary is on a scale ranging from £4610.00 to £5638.00 according to age, qualifications and experience.

For further information and application form please contact the Personnel Officer, North East London Polytechnic, 100 The Grove, Stratford, E15. Telephone 0258 0811, ext. 32 quoting reference number T79/78.

Closing date: June 28th, 1979.

**NELP** North East London Polytechnic

## UNIVERSITY OF KEEL

### COMPUTER ENGINEER

Joint appointment in the Department of Communication and Neuroscience and the Computer Centre. Applications are invited for Computer Engineer to provide technical support for research and development in microprocessors and in the hardware design of interfaces for micro/minicomputing systems, and to be responsible for the maintenance of computer peripheral equipment.

Appointment will be made on Grade 1A of Other Related scale (£4333-£7821).

Application forms and further details from the Registrar, The University, Keele, Staffs, ST5 5BG, to whom completed forms should be required by 2nd July 1979.

## Sales Executives

Ferranti Computer Systems Limited is a leading British manufacturer of real time computer systems with a world wide reputation for quality and reliability. Continuing expansion of both system and equipment sales has led to several vacancies for experienced sales staff.

### INDUSTRIAL CONTROL SYSTEM SALES

We need a mature Sales Executive to join a team responsible for sales of process control computer systems to the steel, oil and chemical industries both in the U.K. and abroad. The nature of the work requires considerable systems analysis and design work by our sales staff, in close collaboration with users, in addition to the primary role of selling and negotiating contracts. The position will therefore appeal to a person who enjoys variety and a deep involvement in computer applications.

### TERMINAL EQUIPMENT SALES

Our PT7 terminal systems are widely used as advanced alternatives to IBM and ICL terminals. We require an energetic Sales Executive to join the group which is responsible for developing business with commercial computer users in the United Kingdom. Our Sales Executives handle all aspects of a sale from initial contact with the customer through to acceptance of order and they are expected to work with a minimum of supervision. This position offers an ideal opportunity for a young person working in data processing and familiar with computer terminals to extend his or her experience into the sales field.

Applicants for either of these posts should have a good educational background and several years' experience with computers. However, the most important qualities we are seeking are tenacity and the ability to communicate with all levels of customer. People with relevant experience but lacking formal qualifications should not be deterred from applying.

The activity is based at our offices in a pleasant part of South Manchester within easy reach of open country and good residential areas.

Competitive salaries will be offered and a productivity bonus scheme is in operation. A company car will be provided. Relocation expenses are available for staff coming from outside the area.

Apply to Mr. W.L. Robinson, Ferranti Computer Systems Limited, Simonsway, Wythenshawe, Manchester M22 5LA, quoting reference 79/WD/4/CW.

These appointments are open to male and female applicants

**FERRANTI**  
Computer Systems



## SENIOR TECHNICAL ANALYSTS (2)

£6,800-£7,600

WORKING AREA

A famous British micro processor based business machine manufacturer which has successfully doubled its turnover each year is looking for a senior analyst with a hardware and software background. He will assess the current and future market place and recommend future products to make this company even more successful. A second senior analyst will be designing and implementing systems for their new generation INTEL 8080 based micro computers. Both exciting positions offer attractive salaries, free PPP, 4 weeks' holidays and assistance with relocation expenses to this lovely area in Surrey CW24/1

## CONSULTANTS

£8,000 TO £9,000

C. LONDON

Have you considered joining one of the top Software Houses and consultants in the country? Not only do they give you a large choice of interesting assignments, but their ongoing training and education schemes are excellent. They require people with 2 years+ in BASIC, FORTRAN, CORAL, RTL/2 or ASSEMBLER on mini or mainframe computers plus the ability to communicate with client personnel. Top grade perks include a 6 monthly salary review, quarterly bonuses, paid overtime and free Life Assurance. CW24/2

## TECHNICAL PROGRAMMER

£4,500 TO £8,000

HAYES

Do you have mini Assembler experience of at least 15 months? If you have, then this intelligent Terminal manufacturer would be the company for you. They are a major subsidiary of an American mainframe manufacturer with an international reputation for excellence. Their products can be used as powerful stand-alone minis or as part of an advanced distributed processing system using the latest DBMS techniques. They offer relocation expenses, CPS and 4 weeks' holidays, plus the chance to shine with corresponding rewards. CW24/3

## REALTIME PROGRAMMERS

£5,000-£6,500

UXBRIDGE

A small, friendly, growing and successful systems house and mini manufacturer involved in communications and message switching systems is very keen to engage experienced Assembly Real-time programmers. This company is using the TI 990/10 mini computer in its products and is in the forefront of technical development. Apply now, enjoy attractive working conditions and ensure a satisfactory and secure career for yourself. CW24/4

## PROGRAMMERS/SENIOR PROGRAMMERS

£5,000-£8,000

N.W. LONDON

Join this happy team in NW London who work for an international mini computer manufacturer marketing and supporting disc based equipment in the £10,000 to £170,000 price range. If you are bright, like hard work and the rewards that come with it, and have a minimum of one year's programming experience (any language) then this would be the right job for you. Company perks include CPS and free BUPA. CW24/5

# TECHNOCRATS!

## TECHNICAL PROGRAMMERS

TO £7,000

W. LONDON

A small systems house, established in 1971, requires graduates or trainee to senior programmers with real-time mini computer experience to work on a variety of projects both in this country and abroad. Your programming background should include either ASSEMBLER, CORAL, RTL/2 or PASCAL, plus some systems design experience (C, A, LSI 2 or PDP 11 knowledge would be an advantage). So apply to join this small, friendly team. Enjoy some overseas travel and make your mark in life! CW24/6

## SYSTEMS AND APPLICATION PROGRAMMERS

£5,000-£8,000

HEMEL HEMPSTEAD

An independent British computer manufacturer, well-established in both the mini and commercial fields and with continuous profitable growth, has vacancies within its software products division for programmers or analysts with experience in one of the following on-line applications, T.P. monitors, executives, communications, micro processor computers or DBMS. They offer successful candidates flexible, relocation expenses, sub. canteen and 22 days holiday. CW24/7

## SENIOR PROGRAMMERS

TO £8,750

C. LONDON

A famous Real-Time consultancy which has an unblemished reputation for excellence is looking for people with Assembly or machine code experience (a high level language as well would be an advantage) on micro or mini computers. Choice of projects are large and exciting and work will be within commuting distance of your home in the Greater London area. Join this company and really enjoy life! CW24/8

## SYSTEMS PROGRAMMERS

UP TO £8,000

HEMEL HEMPSTEAD

Join the market leaders in Key to Disc manufacturing and marketing. Help to develop and support Key to Disc distributed processing and Data Base Management systems. If you have experience in some of the following: Assembler programming, communications, diagnostics, operating systems or compilers, then apply now. This company offers a generous salary (up to £8000) to technical programmers plus a CAR to the support programmer for visiting client sites. Excellent perks include CPS, 4 weeks' holiday, half-yearly bonuses, paid overtime and an active social club. CW24/9

## CUSTOMER SYSTEMS SUPPORT

C £8,500 + CAR

C. LONDON

This major international terminal and mini manufacturer requires three first-rate Systems Analysts to advise, design and install a variety of Real Time applications based around Mini or O.E.M. Mainframe Computers. Excellent opportunity for advancement and top company perks. CW24/10

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S.E.1

Feel like travelling worldwide? A major business firm manufacturer with international associate companies requires an expert RPGII programmer to help install exciting new systems on an IBM System 34 computer. Applications you will work on include sales and marketing, stock control, order processing, fixed assets and financial systems. Candidates should have at least 2 years' computing experience and be prepared to travel. There could also eventually be the chance to learn the latest RPGII language. Large company benefits apply and there are excellent prospects for promotion. CW24/1 MICHAEL

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C £7,000+ PROFIT SHARING + CAR

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CROYDON

Our clients are an international foreign insurance company with the majority of their systems being IBM COBOL people should apply and especially those who would like the opportunity to learn MIV. Although the installation is not large the work is very varied and interesting, and demands a high degree of professionalism. Excellent shopping area nearby and the usual large company perks. CW24/13 MICHAEL

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S.E.1

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SLOUGH

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TO £8,000

N.R. BEDFORD

With a lovely area to live in, pay and working conditions at the top end of the bracket, this surely must be the right move for you. You just need 5 years' experience as an analyst or programmer, based around IBM equipment (using COBOL or PLI) with a preferred O&M background. You should also have the ability to lead a small team working on advanced IBM OS/VS1 CICS systems. Top perks include relocation expenses, flexible, non-C.P.S. subsidised canteen and 4 weeks' holiday. Please apply now. CW24/17 MICHAEL

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£5,500 to £12,000

CENTRAL LONDON

Six large, well-established consultancies wish to recruit systems people with all-round experience on third generation equipment and the right personality to deal with clients who require first-rate service. Technical Communications Consultants are also required where in-depth implementation experience of IBM or DEC latest ranges are essential. Excellent fringe benefits and prospects. CW24/18 MICHAEL

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C £6,000

ESSEX

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| IBM Cobol CS           | N. Anglia  | 3 months |
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### PROJECT LEADER to £8000

The initial task would be to lead a team of six people designing and implementing a range of systems on up-to-date main frame and mini computers. Ideally you should have had two or three years' commercial analysis experience, with a knowledge of COBOL, and be capable of motivating and controlling a small team. (Ref. 150)

### SENIOR PROGRAMMER to £7000

You would be involved in the design of a database and on-line system, with responsibility for two or three programmers. You should have had around three or four years' programming experience, mainly in COBOL; knowledge of IBM OS and PL/I would be useful. (Ref. 151)

Please ring us for a confidential talk, quoting the appropriate reference, or leave a message on our answering machine and we'll contact you.

**EDP SYSTEMS** 01.637 52-53 Margaret St. London W1N 7FF 5796

## DP Consultants London up to £10,000

A major theme of the expansion of Price Waterhouse Associates is the growth of our specialist EDP group. We want to recruit professional and ambitious data processing staff for our offices in Birmingham, Bristol, Glasgow, Leeds, Leicester, Liverpool, London, Manchester, Newcastle, Nottingham and Southampton as DP consultants in the first instance but with the capacity for promotion in the short term to the management positions created by our growth.

Our job is to provide clients with first class advice and assistance on all aspects of their DP activities. This may require us to advise clients on their organisation, hardware and software strategy or to work as members of multi-disciplinary teams including accountants and engineers on systems implementation. We are looking for experienced, technically competent DP staff who have at least four years' commercial systems experience and who want the challenge and additional experience to be gained by consultancy. We are particularly interested in hearing from people who are currently working as senior analysts in a well established DP department or in a technical sales support capacity with a mini or mainframe manufacturer. Practical experience of implementing database or of distributed processing would be an advantage. A working knowledge of French is desirable but not essential.

Starting salaries will be negotiated up to £10,000 p.a.; substantial allowances are paid for work overseas. First class training is provided in both technical and management consultancy skills.

Candidates, male or female, should write in confidence for a personal history form quoting reference M/S/3761 to David Prosser, Executive Selection Division, Southwark Towers, 32 London Bridge Street, London SE1 8BY.

**Price Waterhouse Associates**

### BOROUGH OF SOUTH TYNESIDE Finance Department

**SYSTEMS ANALYST (2) £5232-£5565**  
(National pay award pending from 1 July, 1979)  
**SENIOR PROGRAMMER £5232-£5565**

The Authority is now actively planning for the introduction in late 1979 of an ICL 2950 computer with communications equipment to replace an ICL 1902A.

Applicants to join the Computer Division should have relevant experience, with knowledge of ICL systems and on-line processing an advantage. Training will be given, if required.

Application forms are available from the Chief Personnel and Management Services Officer (Ref. 84), Westoe Hall, Westoe Village, South Shields, Tyne and Wear (Telephone: South Shields 562191), and must be returned by noon, 22nd June, 1979.

### PORTSMOUTH POLYTECHNIC COMPUTING CENTRE

**LECTURER/SENIOR LECTURER IN DATA PROCESSING**

A Lecturer/Senior Lecturer is required to teach data processing and programming ability at degree level. The person appointed will have the opportunity of participating in the research and development activities of the Computing Centre.  
Salary scale: £4101 to £8061 (efficiency) but to £7877 per annum (under review).  
Application forms and further details from the Staff Officer, Portsmouth Polytechnic, Alameda House, Museum Road, Portsmouth, PO1 2QJ, to whom completed applications should be returned by 28th June, 1979. Closing at 4.30 p.m.



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We are looking for a Systems Analyst to work on the above systems; he/she should have at least 18 months' experience on PDP machines (some of which could have been spent in programming).

Other systems are being developed using a bureau based IBM 3032 under OS/MVS and there may be opportunities to work on these systems at a later date.

We provide a friendly, relaxed atmosphere and pleasant working conditions. Benefits include:

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If you would like any further information telephone Mike Beaver, on 01-278 2488. Application forms may be obtained from the Personnel Department, 46 Britannia Street, London WC1X 8RG.

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### STRATHCLYDE REGIONAL COUNCIL

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Applications are invited for the undernoted post at Cumbernauld Technical College, Town Centre, Cumbernauld, Glasgow G67 1HU.

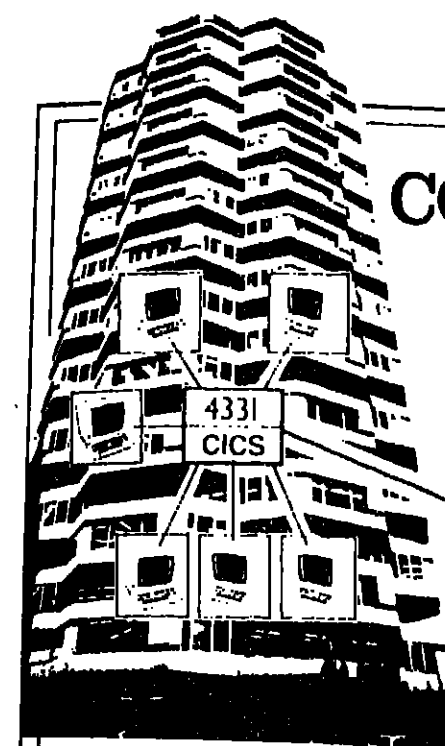
### LECTURER 'B' IN COMPUTER STUDIES AND OPERATIONS

Degree, SHNC Computer Data Processing, Diploma in Systems Analysis and Design, CGLI Advanced Certificate or equivalent. Relevant operations experience essential. Teacher training would be an advantage but training can be given on an in-service basis.

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Lecturer "B" — £4113-£8033.  
Peculiar on the salary scale will be given for relevant experience.

Forms of application and further particulars can be obtained from the College, to whom completed applications should be returned not later than 28th June 1979.

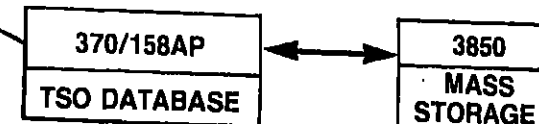
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SNA



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### Senior Systems Analysts

£7,000 - £8,000

We need a person capable of doing a good job immediately and with the potential to move into a more senior position in the department. Although technical skills are important, personality, commonsense, intelligence and an enquiring mind, coupled with the ability to get on well with users, is essential.

The Senior Systems Analyst will have at least three years analytical experience and will have completed a major project. The ability to accept responsibility for implementing large systems, as a Project Leader, to time and budget, is essential. The position requires a programming background and experience of insurance systems is advantageous.

Positions open to male & female applicants, please telephone (24 hour service) for initial discussion or write to address below. QUOTE REF. CW1439J

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# We're successful because our staff are

Data Logic operates at the forefront of computing, applying the very latest hardware and techniques to practical commercial problems. We cover the range from mainframes to the smallest computers. We are leaders in the use of microprocessors for applications that not so long ago required far larger machines.

Many of the systems we supply go far beyond providing extra speed and cost savings. They will revolutionise the way the user organisations operate. Several projects involve dispersed networks of ten or more minicomputers. Our largest turnkey system incorporates twenty-three machines and close to three hundred display terminals across the country — a totally new system which will serve almost every function within a leading company. A new police contract involves the

first use in the UK of a mini for a complex data retrieval application — with our own advanced methods for rapid, generalised record searches.

The exceptional scope and quality of work is important to our staff. We can match their individual experience to their projects. Equally, we can ensure that each project adds to their experience. As computing itself develops, so do they.

Over the past year Data Logic has grown dramatically in size, in scope of work and in reputation. Our expansion has meant unrivalled opportunities for career progression. We are not prepared to promote people before they are ready for it. But when they are ready — and we give all the assistance we can — the positions as senior programmer, senior analyst, project manager and consultant will be there waiting for them.

### Senior Software Staff

(Ref PS30/CW) For mainframe, mini computer and mixed processor systems, usually supporting terminal networks. Increasingly Data Logic's turnkey projects involve minicomputers at multiple sites.

Applicants must have at least five years experience including some work in consultancy, system design and management. Substantial knowledge is required of either high level language implementation on a leading miniframework or assembler language development on DDC Data General or other leading minicomputers.

We are especially interested in experience of:

- database systems
- distributed systems
- data communication
- telemetry
- operating systems design and implementation

Salaries will be highly competitive and a company car is provided to staff at senior team leader level or above.

There are vacancies at our Greenford, Birmingham and Manchester offices.

Write or call, quoting the appropriate reference number:  
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Data Logic Limited  
29 Marylebone Road  
London NW1  
01-486 7288

A Recruitment Partnership

### Programmers

(Ref PS31/CW) For both mainframe and minicomputer projects which include commercial applications, monitoring and control, and scientific analysis. Applicants should have at least three years programming and/or analysis experience in high-level language or assembler on any leading mainframe or minicomputer.

This is an outstanding opportunity to gain experience in the development of complex high performance software. Our programmers work in small teams, taking considerable responsibility for distinct areas of the total system.

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**Data Logic**

Ref 151



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(DEPUTY D.P.M.)

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This public company is a major force in the design, manufacture and marketing of a range of products within the greeting card industry. A number of financial and stock control systems are run, at present utilising both DDE and on-line VDU's, and there are plans for extensive future development.

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Ref. SW1/1406/CW

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Salary at an appropriate point on the AP11 scale £4388-£4773 (currently under review) with possibility of future advancement to a higher scale. Financial assistance towards the cost of removal expenses may be payable.

Further particulars and application forms may be obtained from the Administrative Assistant (Establishment), Dundee College of Technology, Bell Street, Dundee DD1 1HG, to whom a completed application should be returned by Wednesday, 27 June 1979.

## UNIVERSITY OF SALFORD COMPUTING LABORATORY PROGRAMMER

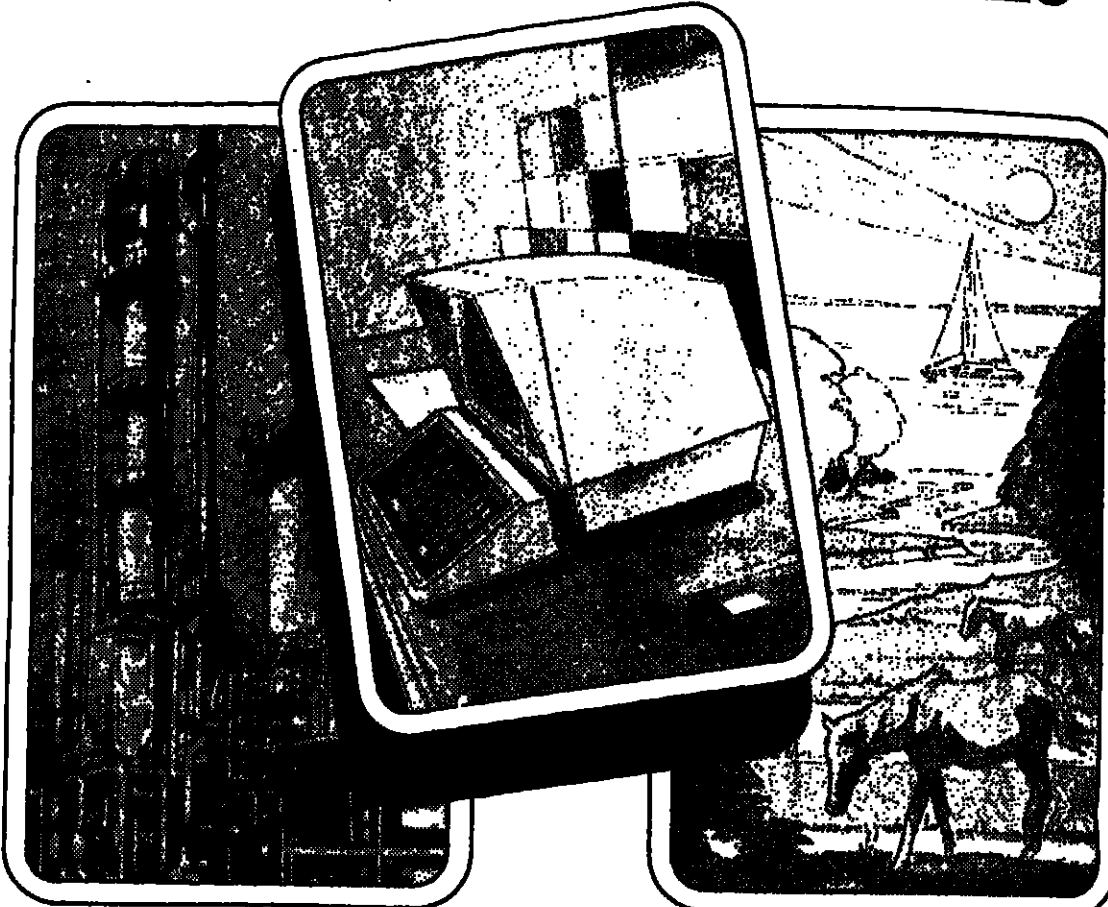
In the Operating Systems Group of the Computing Laboratory to provide systems support and development for the University's computing service on its PRIME 550/500 and 100/100-48 configurations. Applicants should have a good knowledge of FORTRAN and any assembly language experience would be an advantage.

It is intended that the programmer would also assist in the production of software for microprocessors in the Microcomputer Laboratory but no direct experience of microprocessors is required.

Salary scale: £3200 - £3800

Further particulars and application forms may be obtained from the Administrative Assistant (Establishment), Dundee College of Technology, Bell Street, Dundee DD1 1HG, to whom a completed application should be returned by Wednesday, 27 June 1979.

# COMPUTER PROFESSIONALS



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### Senior Programmer

The successful candidate is expected to become a key member of the programming group and should have the potential to lead and co-ordinate projects.

We are looking for a young programming professional with at least three years experience, ideally on a large IBM configuration, who has worked with PLI, VM/CMS and data base applications. A degree in Computer Science, Engineering or a numerate discipline is essential.

### Systems Analysts

You will be working closely with users who are engineering professionals, and you should have good communicating skills and the potential to lead a team in the future. A degree in an Engineering related subject is essential with at least two years experience in a manufacturing or technical environment. A programming background would be an advantage.

### Communications Systems Engineer

This is a unique opportunity for a proven engineer to take overall responsibility for implementing, commissioning, developing and supporting all communications on site. You should have a degree in Computer Science or equivalent and at least 5 years experience in telecommunications and/or process control software systems. Experience of Process computing real time software systems, or IBM Terminal/teleprocessing systems would be an advantage.

Great opportunities certainly but a great challenge too. You will have a lot of personal responsibility and your ability and effort will be one of the keys to ensuring a successful project completion.

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To find out more about the opportunities we are offering, telephone Howard Winters, Employee Relations Adviser or write for an application form to: Esso Chemical Limited, Fawley, Southampton, Tel: Southampton (0703) 893822.



## PROGRAMMER with systems potential

We are looking for an experienced programmer interested in expanding his/her career into systems work.

The post will ideally suit someone with about two years COBOL programming experience who is now looking for a wider job responsibility.

The job requires both the ability to work with minimum supervision and to communicate effectively with all levels of staff and management in an industrial environment.

The Company which is part of a major UK Group is entering the next phase of computer development. The person appointed will report direct to the D.P. Manager and the post offers both a high level of job interest and very attractive terms of employment.

Please write, giving details of experience, or telephone: A. S. Langley, Recruitment Officer

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### THE OPEN UNIVERSITY

Data Processing  
Division

## Operations Planning Analyst

Salary up to £7,000

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The Operations Planning Section plays a vital role in representing Data Centre interests in the early development of systems. In facilitating the hand-over of newly developed systems to the operation and in supporting accepted systems on a continuing basis.

Applications are invited from persons who have experience of programming and computer system design, preferably with knowledge of Univac 1100. Career development prospects are good and in addition we offer: good holiday provision; relocation with housing available to rent or to purchase at reasonable prices; sport/social facilities.

Application forms and further particulars are available from the Recruitment Office (J22479/2), The Open University, Box 75, Walton Hall, Milton Keynes MK7 9AL or Milton Keynes 83888. 24-hour answering service.

Closing date for applications: 29th June

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Applicants must have one years experience on any of the above languages.

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### PROGRAMMERS

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Office 1: 1:30



Beaufort



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Please phone Alan Mannion now on 0452 418810 (day), 04536 3299 (after 7 p.m.) or write to him at the address below.

A. F. Mannion  
BEAUFORT COMPUTER SERVICES LIMITED

BEAUFORT COMPUTER SERVICES LIMITED  
INCUBATION AND TRAINING DIVISION  
PENGLAND HOUSE WHITEFIELD STREET  
CLOUDESTON GL1 1PG Tel: 0452 418810

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### ORIGINAL SYSTEMS DEVELOPMENT

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This is an opportunity to join a leading company which designs, manufactures and markets the world's most successful word-processing systems. They are enjoying tremendous growth and, naturally, career prospects are very good indeed.

As a leading member of a creative software team, you would be closely involved in the design and development of specific customer applications, generalised packages and utilities to enhance the product range. The opportunity will be attractive to outgoing, personable candidates who:

- have had significant grass roots assembler level programming experience on any small machine and have led small teams of programmers.
- enjoy using their initiative, are flexible in their approach and happy to take off their jackets to get things done.
- are mobile and would enjoy occasional travel both to America and the Continent (knowledge of one or more European Languages — Spanish, French or German — would be useful).

This exciting international company will double its turnover in 1979, giving those who join now a wonderful chance to progress their careers. If you would like to hear more about it, then ring us for a confidential exchange of information or write briefly quoting ref. 967, or leave a message on our answering machine after hours and we'll contact you.

**EDP SYSTEMS** 01.637 5796  
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##### CITY OF BIRMINGHAM POLYTECHNIC

To work in the Computer Centre which operates ICL 1900 and micro-computer equipment and is proposing to install other computer systems.

A degree in Computer Science or an H.N.D. in Computer Studies would be an ideal qualification, but consideration will be given to applicants with other computing experience.

Candidates, male/female, may obtain application form (returnable by 28th June, 1979) and further particulars from:

The Personnel Officer  
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Ring Southampton  
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Location — Dorking/Reigate.
4. **GRAPHICS/INTELLIGENT TERMINAL** engineer to maintain our new and existing customer base. Products include CIL's new micro processor controlled Series 4 graphics terminals, XY plotters, daisy wheel printers, and optical mark readers. Experience in digital electronics and some computer terminals desirable.  
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Apply in writing to: I. M. WHITE  
Customer Service Manager, Tel: C/F 68321  
Computer Instrumentation Limited  
School Lane, Chislehurst, Eastleigh  
Hampshire SO6 3YV

#### LESSON 1

Contact us. We're interviewing right now!

We have many excellent career opportunities for Field Engineers who would like to become lecturers at our training school in South Harrow. It could prove a logical step in your career... even if you've had no previous lecturing experience.

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Consider whether you would enjoy teaching others.

There's a great deal of job satisfaction in passing on your skill. They benefit from your valuable experience. And you gain too because you'll have to learn far more about your own specialised field than you know now. You will keep abreast of the latest servicing techniques and you will be trained in-depth yourself.

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Ask yourself if you have the personality.

Obviously you may have doubts about your ability to teach a class of professional people. But if we think you have the ability, we'll help you to develop your skills. Ideally we're looking for those who feel they have natural leadership qualities and feel capable of presenting facts and concepts in a coherent way.

#### LESSON 4

Check out the company you will be joining.

We're one of the world's foremost computer companies with over 63,000 installations world-wide. Our products are used across the whole computer spectrum from commercial applications through to scientific tasks.

#### LESSON 5

Act now while this is still fresh on your mind.

Phone or write to Janet Field at the address below.

## COMPUTER PROFESSIONALS

### A REWARDING CAREER IN SALES WITH A MAJOR MANUFACTURER

#### LOCATIONS SOUTH-EAST ENGLAND

We are recruiting into key positions for an International Computer Manufacturer offering a structured career path for trainee and experienced Sales Executives, where you will be working with advanced equipment that enjoys an excellent world-wide reputation.

Our client provides everything you require to be successful:

- \* exciting highly competitive products
- \* full technical support facilities
- \* on going sales, product and management training
- \* realistic and achievable quotas

You could become part of our client's exciting future and join a professional and successful sales force where you would enjoy the substantial rewards of a renowned manufacturer. Ideally candidates should possess:

### SALES EXECUTIVES

- \* a confident sales personality to accompany a successful track record in selling mini and mainframe computers.
- \* the qualities and attributes to work in close contact with existing clients and the ability to identify new prospects.

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- \* a real wish to sell in a professional environment.
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A quality saloon car, full expenses, plus other large company benefits apply.

So pick up the telephone now and dial SIMON LEVER on 01-935 0671 or Hagley (0562) 884166 (evenings and weekends).

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Specialist Computer Recruitment Ltd.

## ab minicomputer special

Working in minicomputers has special advantages — 'across the board' involvement with interesting applications and industries — better career path options particularly at the senior levels — training in up-to-date techniques, languages, etc., that will stand you in good stead for years. Our consultants are in regular contact with all of the recognised 'mini' companies — six are featured below — and applicants that we have introduced to them tell us we're right.

### CUSTOMER ENGINEERS

(Start £6,000 + Overtime + 2 litre car)

Fabulous opportunity to join a leading manufacturer of a wide range of prestige mini computers and peripherals. Excellent prospects include above average growth (43% increase in turnover plus two new branch offices plus 21 new product launches, all in the last year). Helpful friendly young management.

Basic salary £6,000 plus overtime plus luxurious 2 litre car plus training. If you are ambitious, feel capable of assuming responsibility, why not take that all important step forward — If living in London, Home Counties, Midlands, West or North call us today but hurry...  
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#### STOP PRESS

THE TOP micro-maker offering exceptional benefits package for minicomputer experience.  
Ref. EK2137

### SENIOR PROGRAMMER

£6,500 + bonus + choice of car

Our Client, a successful hardware and systems company with an impressive customer base enjoys a good reputation supported by a comprehensive product range. They offer a fabulous opportunity to an ambitious programmer (pref. Basic) to develop on-line applications. Based in Kingston or West London, you will have lots of variety and contact with people, only limited travel and plenty of scope for personal advancement. Nice people, generous (exceptionally low staff turnover), superb working conditions (sometimes work from home), you will attend training courses. £6,500 + car + profit share. Ring for further details now.  
Ref. CC613.

### SOFTWARE PROGRAMMER 6K+

Working based company marketing middle to commercial users offers great opportunity to self-starters with ASSEMBLER working on File Management systems, communications, etc. Friendly young colleagues. Free car park, station just off the road. If petrol runs short...  
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### SALES EXECUTIVES

£17,000 + Car

Our client, one of the New Leaders in the Mini-Computer field, who during 1978: Broke the £100M barrier. Doubled their Turnover. Doubled their Customer Base. Built 2 Major Facilities. are offering exciting opportunities in the South to ambitious Sales Executives. If you need: Basic Salary c. £7,000 Earnings Guarantee Realistic Quotas Generous Commission (on quota £17,000) 2 litre car Comprehensive Training Unrivalled management opportunities Then call today.  
Ref. CS1148

### CONSULTANTS

£8K-10K

Our clients — a world-wide minicomputer company — are building up a newly formed team to handle one-off user requirements. You will be meeting people in a variety of different industries, you will have opportunities to travel if you wish. This is a superb chance to apply your commercial systems background in a multi-discipline role — pre and post sales support, analysis and design proposals, project management, etc. Your S&P background will determine the salary level.

The Company is based in the Maidenhead-Reading area with good travel to London and the West Coast.

Employment will come easily for an achiever. If you are ready now, see below.

### STOP PRESS, URGENT EUROPEAN M.I.S. MANAGER

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ab executive (kingston) tel 01-549 6441



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COULD YOU DRIVE an IBM 3031 for



Yes? then here is the ideal career move for you to make by joining Avis at their Europe, Africa and Middle East headquarters located at Bracknell, Berkshire. An IBM 3031 running under MVS/JES 2 and TSO has recently been installed and forms the base for systems being run for Avis Operations in France, Italy, Germany and the U.K. via an RJE network.

This continued expansion of Avis's operations, including the development of a mini-computer network allows the company to offer exceptional career opportunities, such as:

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Upwards of 1 year's IBM OS experience could gain you a position in Avis's computer operations team operating the IBM 3031 under MVS and TSO.

Conditions of employment are first class and include a TWO SHIFT operating system, excellent overtime payments (where necessary), free BUPA, subsidised staff restaurant and a friendly working environment.

If you are considering changing your job (perhaps for the first time) then contact REX SCOONES at Capp Associates Croydon office for full details of this opportunity and an application form.

Positions open to male & female applicants, please telephone (24 hour service) for initial discussion or write to address below. Quote Ref: CW 147-9S

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01-240 2441

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### CONTROL CLERK/ OPERATOR DAYS ONLY, 7 p.m.-3 p.m. £4,132

Premium  
WEST LONDON

SHIFT LEADER

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IBM 370/145 DOS/VS

IBM OPERATOR

To £5,360 + Bonus

A major cosmetics manufacturer based in WEST LONDON, is keen to recruit a Data Control Clerk who wishes to progress into PROGRAMMING. Initially your duties will include the operation of the DATA 100 terminal, logging input into Data Control, distribution of output and liaison with user departments to insure the smooth running of their work. After a period of one year, you would be given the opportunity to progress into computer programming. Company benefits include: NON-CONTRIBUTORY PENSION SCHEME, GENEROUS DISCOUNTS ON COSMETIC PRODUCTS, RAIL TRAVEL ASSISTANCE SCHEME and SUBSIDISED STAFF RESTAURANT.

PK10107/CW14/6

An excellent organisation in Middlesex is currently looking for a SHIFT LEADER or capable supervisor who would be prepared to work on a three-shift system. Apart from being a very pleasant and friendly environment, this expanding company can offer a mortgage subsidy, sports and social club and four weeks holiday.

SF10099/CW14/6

Our client's group of companies is the largest of its kind in the country. Their services are world-wide and include insurance and reinsurance, broking, shipping, trading and engineering. They utilise the facilities of an IBM 370/158 (soon to be replaced by an IBM 30/31) and are currently seeking an experienced OS operator approximately 2-3 years' practical knowledge of VSII and/or MVS. Based in the city you will enjoy working a standard three-shift system.

KS9531/CW14/6

A go-ahead company in Middlesex, offering excellent working conditions, would be delighted to see operators who have either 2903 or 2904 experience. Very good prospects are available to suitable applicants who are interested in advancing their career.

SF10091/CW14/6

OPERATOR

C. £4,500

ICL 2904

1900 OPERATOR

£4,000 + Bonus

Just nine months' GEOL knowledge should be sufficient experience for you to operate our client's 1902s. During September, 1979, a 2906 will be installed and a telecommunications system introduced. At a later date the right applicant would be accepted in the programming division if he/she so desires. The position is CITY BASED and requires working DAYS ONLY.

KS10095/CW14/6

# KNIGHT PROGRAMMING SUPPORT LIMITED

MANCHESTER

143/4 ROYAL EXCHANGE BUILDINGS



## PERMANENT

### CURRENT VACANCIES INCLUDE:

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MIDLANDS c£7000  
Project leader or similar experience required, working on ICL equipment in a commercial environment. Excellent opportunity. Ref. 1169.

#### SYSTEMS ENGINEERS

CLEVELAND c£7600  
Our client requires Systems Engineers to work on PDP11s. Dibal or Basic experience required. Ref. 1158.

#### SENIOR SYSTEMS ANALYSTS

CHESHIRE c£7000  
House purchase scheme/relocation expenses offered. Analysts required to work in a new installation on UNIVAC equipment. Ref. 1021.

#### SYSTEMS ANALYSTS

LANCS. c£8600  
A subsidised mortgage is among the benefits offered by our client to successful applicants with IBM experience. Financial applications. Ref. 1136.

#### SYSTEMS ANALYSTS

NORTHWEST c£7000  
Our client requires Analysts to supplement project teams for the expansion of work at present. IBM experience an advantage. Ref. 1166.

#### PROJECT LEADER

MIDLANDS £6300  
Our client requires a project leader to run a development team working on a communications network. ICL Cobol/Plan experience. Ref. 1140.

#### ANALYST PROGRAMMERS

LANCS. £5000  
Our client requires Analyst Programmers with IBM/Cobol experience to work on a leading expanding installation. Excellent career opportunities. Ref. 1064.

#### PROGRAMMER ANALYST

MIDLANDS c£5000  
Programmer Analysts required to work on ICL equipment in a commercial environment. Cobol/Plan experience an advantage. Ref. 1170.

#### ANALYST PROGRAMMERS

NORTH £5500  
Analyst Programmers with ICL Cobol experience are required to work in various installations across the North. Ref. 1156.

#### ANALYST PROGRAMMERS

YORKS. c£5500  
ICL/Plan experience would be considered ideal by our client who is currently expanding the D.P. centre. Ref. 1164.

#### PROGRAMMERS

IRELAND c£5500  
Programmers are needed in various installations in Eire to work on DEC PDP11s. Dibal or Basic experience an advantage. Ref. 1158.

#### PROGRAMMERS

STAFFS c£6000  
Programmers with Honeywell/Cobol experience and a Software Interest are required by our client. Bonus scheme/relocation expenses. Ref. 1151.

CONTACT: JOAN JOHNSTONE  
061-633 9341 (24 HRS.)

#### CMC REALITY PROGRAMMERS. 6 MONTHS

NORTH

c£NEG

#### PDP11 CORAL 66 RSX11 PROGRAMMERS

NORTH

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#### 2903 COBOL PROGRAMMERS WITH APPLICATIONS MANAGER EXPERIENCE

NORTH

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#### IBM 370/OS PROGRAMMERS WITH TSO/ ASSEMBLER EXPERIENCE

NORTHWEST

c£230

#### PDP11 RSTS BASIC 2 PROGRAMMER

MIDLANDS

c£230

#### ICL 1900 FTL6 PROGRAMMERS

MIDLANDS

c£220

#### GEC 4080 PROGRAMMERS

NORTH

c£NEG

#### PL1 CICS DL1 PROGRAMMERS

MIDLANDS

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c£230

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NORTH

c£220

#### UNIVAC 1100 ASSEMBLER PROGRAMMERS

NORTH

c£220

#### SINGER SYSTEM 10 ASSEMBLER PROGRAMMER

NORTH

c£220

#### IBM 370 OS/VS1 COBOL PROGRAMMERS

MIDLANDS

c£220

For details of these and other contracts please contact Judy Lane/Lynn Barton on 061-633 9341/8 (24 HRS.)



## Tomorrow's Automation Systems Today

Confirming increasing industry speculation, a Surrey based high technology systems house today announced a plan for expansion into the 1980's. Riding on the crest of the mini and micro computer revolution, this specialist subsidiary of a prestigious international engineering consultancy group have established themselves as a leading exponent of software solutions to the problems of industrial and business automation. With a rapidly filling order book they are now seeking to recruit software specialists experienced in the development of mini and micro based systems for applications such as Process Control, Machine Shop Automation, Communication Systems, and Plant Control. Offering salaries at the top of the market range up to nine and a half thousand pounds per annum, career prospects for steady growth and attract high quality staff whose aspirations are towards true professionalism - a challenging career in a well established and successful company as well as keeping pace with the very latest computer technology.

For further information about these ground floor opportunities, call, in confidence, James Plummer, Senior Consultant on 01-935 0671 or 01-650 6971 evenings and weekends.

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Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA

### SYSTEMS MANAGER - £ Negotiable

A major international company is seeking a management orientated DP expert to take charge of systems development and ensure cost effective use of the company's systems development resources. Applicants with at least 10 years DP experience must ideally have proven management experience and administrative ability. SUSSEX COAST.

### PROJECT LEADER £8,000+

A well known company is seeking a Project Leader to take charge of around 6 analysts and programmers working on financial and commercial applications. Interesting development work. No maintenance. Applicants must have supervisory experience in a senior analyst capacity. SLOUGH

### SYSTEMS DESIGNER C. £8,000

This position would suit an Analyst wishing to get on with the work of maintaining a now on-line systems design (OL1) which is halfway through development - and not have user contact. Excellent prospects. CROYDON.

### ANALYST/PROGRAMMER TO £7,500

Could the idea of working in a new DP department with total involvement interest you? You will need to have at least 2 years RPG II experience and one year's analysis preferably gained on a manufacturing environment. The new installation will be an IBM System 34 SUNBURY-ON-THAMES.

### BUSINESS ANALYST TO £8,000

Two analysts are urgently required to work with users, produce user manuals and to liaise with technical teams. Applications cover financial, accounting package and payroll. CROYDON.

### ANALYST/PROGRAMMER TO £7,000 PROGRAMMER TO £6,000

Two to three years' experience of COBOL is required by a commercial services company. The analyst/programmer must have some supervisory experience as well, in order to take charge of a small team of programmers. MR. HEMEL HEMPSTEAD.

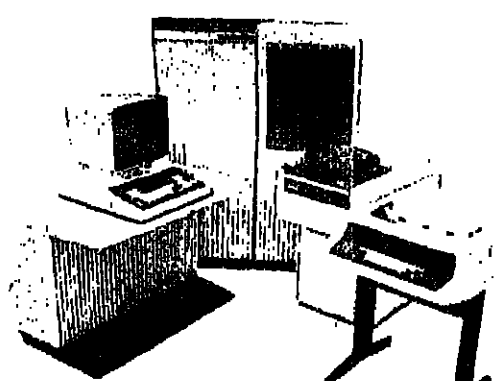
### PROGRAMMERS TO £6,300 JUNIOR PROGRAMMERS TO £5,500

COBOL programmers are required for a prestigious manufacturing company. Candidates with at least 2 years' COBOL, ideally gained on a System 10, are urgently required. Alternatively, IBM ASSEMBLER or RPG II considered. SLOUGH.

To apply for any of the above vacancies, please phone for an Application Form. In addition to the above, we have various companies throughout London and the Home Counties seeking computer staff of all qualifications and experience. Please phone for details of positions that might interest you in your chosen locality.

**AMES PERSONNEL**

Employment Agency Suite 14, Dryden Chambers,  
119 Oxford Street, London W1R 0PA Tel: 01-434 1106



## JOIN THE 3200 TEAM

**Out in Front**  
The new Perkin-Elmer Second Generation machines (see advert on Page 17) are selling so well we need more analysts and support engineers. Join the 3200 Team and be out in front with the latest in 32 bit hardware and software.

**Salaries to £7000**  
PLUS car, PLUS 'large company' benefits. For further details' phone Christine Furlan on Slough 34611 or send C.V.

### PERKIN-ELMER DATA SYSTEMS LTD.

International Support Group Perkin-Elmer Data Systems Ltd., 227 Bath Road, Slough, Berks.

#### Support Analysts

To install and maintain software in the UK and occasionally the rest of Europe minimum of two years experience in industry on commercial, scientific or communication systems.

#### Support Engineers

To become experts on Perkin-Elmer hardware - to support the field service organizations in UK and the rest of Europe - minimum of 5 years experience in the industry.

### UNIVERSITY OF ESSEX

#### Programmer in the Department of Computer Science

Applications are invited for a post of Programmer to maintain and develop software, primarily for the DEC System-10. The appointment is a temporary one, tenable from 1 July, 1979, or as soon as possible thereafter, to 30 September, 1980. Applicants should possess relevant academic qualifications, have a specific interest in systems software and preferably some previous experience. Salary on the Range 1B or 1A scale: £3888-£8321 or £4232-£1445 per annum (both scales subject to revision from 1 October, 1979).

Applications (three copies), including a curriculum vitae and the names and addresses of two referees, should reach the Registrar (A9/82/CW), University of Essex, Wivenhoe Park, Colchester CO4 3SQ, from whom further particulars may be obtained, by July 8, 1979.

### COBOL PROGRAMMERS

London & S.E. England

Salaries to £7,000

or

**MACROLOGIC**

(recruitment consultants)

01-278 5634

COUNTRY OF ESSEX, UNIVERSITY OF ESSEX, COLLEGE OF FURTHER EDUCATION, Prince's Road, S.E. 14, London, S.E. 14, London, S.E. 14.

APPOINTMENT OF LECTURER IN COMPUTER STUDIES

Applications are invited for a post with duties to be carried out in the Department of Computer Science, University of Essex, Wivenhoe Park, Colchester CO4 3SQ, from whom further particulars may be obtained, by July 8, 1979.

### UMIST LECTURERS IN COMPUTATION

The Department of Computation is an expanding department with one of the largest Honours Schools in the country. The graduate output is highly sought-after by industry. The Department is reasonably well-equipped, having two MOD-ONE computers, six PDP 11/03 computers and one 11/34 for research. The Department also makes good use of the Regional Centre's large CDC 7800 computer.

(a) Systems Analysis and Data Processing Ref: COM 88/1/BC

(b) Systems Software and Language Teaching Ref: COM 88/2/BC

(c) Applications of microelectronics, including microprocessors and design methodology via Distributed Computer Systems Ref: COM 88/3/BC

Applicants should have had previous professional experience in an appropriate environment: previous teaching experience is not essential. The salary scale is £4232-£8462 p.a. which is subject to a guaranteed revision from October 1979 plus a cost of living rise.

Application forms and further particulars may be obtained from the Registrar, UMIST, P.O. Box 88, Manchester M60 1UD, quoting the appropriate reference. Closing date 8th July, 1979.

Applications are invited for the following post at Police Headquarters, Ripley, Derbyshire. A job description is available.

### SYSTEMS ANALYST

The salary will be in accordance with the National Joint Council for Local Authorities Administrative, Professional, Technical and Clerical Staff P.O.D. Scale £5415-£8030 per annum plus £312 per annum supplement. The successful applicant will be required to form part of an existing computer project team. He/she should have experience in the design and programming of Real-Time Systems using mini computer hardware and should have a good knowledge of at least one assembler and one high level language and experience of testing and resolution of problems at system level.

The successful applicant will be required, under the direction of the project manager, to assist in the evaluation, design and development of on-line, real-time computer systems for the Derbyshire Constabulary which will include command and control and information systems, from feasibility to implementation and thereafter continuing system development and maintenance, also liaising with the local authority in connection with the design and development of police applications on their I.B.M. main frame.

A degree or appropriate professional qualifications is desirable. Application forms may be obtained from the Chief Constable, Police Headquarters, Buttery Hall, Ripley, and should be returned without delay.

## SENIOR PROGRAMMERS

Riyadh, Saudi Arabia

The Civil Service Bureau of the Government of Saudi Arabia has developed a computerised Personnel and Payroll Data Base System, to handle reports on salary administration, personnel motivations, education planning, placement selection and manpower development.

Successful applicants are expected to participate in implementing this System, as well as develop further Sub-Systems, using IBM 370/158 OS/VS, IMS.

#### Requirements: a minimum of

- College degree in computing.
- Seven years' COBOL programming experience with the last three years in Data Base applications.

#### Benefits:

- Attractive salary depending upon qualification.
- 45 days' annual leave.
- Air travel for self and family.
- Housing and Transportation allowances.

Correspond to (no later than Aug. 15, '79):

Director  
Data Processing Dept.  
Civil Service Bureau  
Washim Street  
Riyadh, Saudi Arabia



NORTH MIDLANDS CO-OPERATIVE SOCIETY LIMITED

require

### SYSTEMS ANALYST

Applications are invited for the above post from persons with at least three years' experience in systems analysis within a 1800/2900 COBOL environment.

The Society operates a batch processing 2903 system with EDS 80s, DDE input and an FJE link to the CMS computer centre in Manchester. The Computer Department is situated at Telke near Stoke-on-Trent.

The successful candidate will be responsible for the design and implementation of systems, involving the supervision of a small team of programmers and will also deputise for the DP Manager in his absence.

Initial salary will be in the range £6,000-£5,700 depending upon experience and qualifications.

Applications should be addressed to:

The Personnel Officer  
North Midlands Co-operative Society Limited  
10 Newcastles Street  
Burslem, Stoke-on-Trent  
Tel: 65881

Applications should be addressed to:

The Personnel Officer  
North Midlands Co-operative Society Limited  
10 Newcastles Street  
Burslem, Stoke-on-Trent  
Tel: 65881

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Tel: 65881

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North Midlands Co-operative Society Limited  
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Burslem, Stoke-on-Trent  
Tel: 65881

Applications should be addressed to:

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Applications (three copies), including a curriculum vitae and the names and addresses of two referees, should reach the Registrar (AG/82/CW), University of Essex, Wivenhoe Park, Colchester CO4 3SQ, from whom further particulars may be obtained, by July 6, 1979.

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(a) Systems Analysis and Data Processing Ref: COM 88/1/80

(b) Systems Software and Language Teaching Ref: COM 88/2/80

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Application forms and further particulars may be obtained from the Registrar, UMIST, P.O. Box 88, Manchester M60 1QU, quoting the appropriate reference. Closing date 6th July, 1979.

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If you like the idea, and you'd like to find out more, you can arrange an early interview by phoning BABS Systems Control on 01-759 5511 Ext. 5156/3232/3697 on Tuesday 19th or Wednesday 20th June between 6 pm and 8 pm or any day during normal office hours.

Alternatively, write to: Recruitment & Selection, British Airways, P.O. Box 10, Heathrow Airport-London, Hounslow, Middlesex TW6 2JA.

British Airways welcomes applications from suitably qualified Registered Disabled Persons.

British  
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chip 1/1/79

### WALSALL METROPOLITAN BOROUGH TREASURY DEPARTMENT COMPUTER DIVISION

The division is responsible for developing operations and maintaining systems of all departments of the Authority. The mainframe equipment consists of an ICL 64K 1902T and communications equipment. Data preparation is via a G.C.S. key to disk system; remote terminal equipment includes a 7502 system and 931 terminals linked to processors. The George II operating system is used together with comms manager and driver for the real-time applications. The programming languages used COBOL and PLAN. Applications are invited for the following posts:

#### CHIEF PROGRAMMER

(P.O. 1 (3-7))

Salary range £5748 plus £312 p.a. to £6390 plus £312 p.a. A minimum of 4 years' suitable programming experience and practice of staff supervision is required.

#### SENIOR PROGRAMMER

(A.P. 8501)

Salary range £4611 plus £312 p.a. to £5256 plus £312 p.a. A minimum of 2 years' suitable programming experience together with knowledge of principles of staff supervision is required.

#### SYSTEMS ANALYST

(A.P.S. 801)

Salary range £4611 plus £312 p.a. to £5256 plus £312 p.a. A programming background is required. A knowledge of the principles Systems Analysis and education to degree standard is highly desirable. Application forms may be obtained by writing to the Treasurer Walsall Metropolitan Borough Council, Civic Centre, Walsall WS1 1TV, or by telephoning Walsall 21244 ext. 2809. Complete forms should be returned by Monday, 26th June, 1979.

### DATA PROCESSING SUPERVISOR

#### WEST BYFLEET, SURREY

Required for a technical consultancy mini computer.

**Experience:** Previous experience on IBM 1130 systems operations or equivalent a necessity. Knowledge of Fortran IV essential, Assembler and Cobol an advantage.

**The Job:** Supervision of and responsibility for all aspects of computer operations. Hands-on operation of computer system and peripherals. Running jobs and checking output. Programming and liaison with user staff for either full programming or de-bugging of technical programs.

**The System:** Digital Scientific Meta 4. 32K main core, 16K auxiliary core. Operates under IBM 1130 emulation mode. Card reader 600 cpm, Line Printer 300 ipm. Multidisc (2) 40 megabytes, single disc. 1 megabyte. Plotters, digitiser and tape unit, terminals.

The position requires dedication and drive with the ability to exercise initiative and anticipate job needs, be articulate and mix with all staff levels.

Salary £8,000 per annum negotiable. Fringe benefits.

Applications in writing to:  
Miss C. J. Horton  
Gaffney, Cline & Associates Limited  
GCA International Building  
Rosemount Avenue, West Byfleet, Surrey

### NETWORK CONTROLLER

#### CROYDON, SURREY

Up to £8487 plus current self-financing productivity payment.

South Eastern Gas require an experience data communications specialist to manage the growth and operation of a large teleprocessing network based on IBM 3032/3031 computers. Approximately 400 terminals are presently installed throughout the South-East of England, providing real-time and interactive text and data processing facilities to many users within this region of British Gas. A further 400 terminals are planned for introduction by the end of 1980.

The Network Controller will be responsible for equipment evaluation/procurement, network design, installation planning, and via subordinate staff, network operations management.

Applicants should have had previous data communications management experience, ideally in a large systems environment. A sound knowledge of Post Office data communications facilities and of IBM hardware/TP software is essential. The ability to work on one's own initiative is of paramount importance in this demanding position.

A considerable amount of travelling is involved for which a generous car allowance will be paid.

\*Good working conditions \*Generous holidays \*Sick pay/pension and insurance schemes \*Sports and social facilities

Write, giving full details, within 7 days, and quoting Ref. 0.5151, to:  
Personnel Manager, SEGAS

People come first with  
**SOUTH EASTERN GAS**

### Technical Support Programmer

(Ref. P.4)

### Programmer

(Ref. P.6)

In our conveniently situated, modern, air conditioned computing centre overlooking the Thames at Reading.

Working conditions are excellent including a FLEXIBLE 35 HOUR 6-DAY WEEK, a SUBSIDISED STAFF RESTAURANT and an ACTIVE SOCIAL CLUB. Additional benefits include generous sick leave allowances and a MINIMUM ANNUAL HOLIDAY OF FOUR WEEKS.

Excellent starting salaries will be payable to the right people.

For an application form and further details telephone or write to the Personnel Office Thames Water, Thames Conservancy Division, Nugent House, Vauxhall Road, Reading RG1 8DB (Telephone: Reading 593331). Please quote post reference.

### Thames Water

### YORKSHIRE WATER AUTHORITY RIVERS DIVISION

### COMPUTER OPERATIONS SUPERVISOR

Grade 4 — £3,867-£4,164 per annum plus the current supplement of £312 per annum.

Applications are invited from suitably qualified men and women for the above vacancy.

During 1978 the terminal was changed to an ICL 7503 and has been connected to the Authority's own ICL 2970 computer located in Bradford operating under VME/B.

The successful applicant will be responsible for the control and operation of the installation, including data preparation, staff control, remote batch terminal and operating system experience is essential.

Application forms are available from the Personnel/Activity Officer, Yorkshire Water Authority, Rivers Division, 21 Park Square South, Leeds LS1 2QG (Telephone: Leeds 40191 Ext. 306) to whom they should be returned not later than Monday, 26th June, 1979.

**Yorkshire Water**

### F. W. WOOLWORTH & COMPANY LIMITED

### COMPUTER OPERATIONS TEAM LEADER

Salary up to £5,800 p.a. inc. Shift Allowance

We are looking for someone who can demonstrate a minimum of three years' operating experience on ICL 1800 equipment using the George 3 operating system. The applicant will be capable of controlling the activities of a team of operators performing both on-line or off-line tasks as necessary.

We are an expanding site, currently running on ICL 1804A x 192K and a 1903A x 64K on a 3 shift basis. Conversion to 2900 is scheduled to take place during 1981.

Please write for application forms and job description to: The Personnel Manager

F. W. Woolworth & Co. Ltd.  
Swindon Complex, Faraday Road  
Dorcan Industrial Estate  
Swindon, Wilts SN3 8HD

**£4000-  
£7000+**  
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Analysts &  
Programmers  
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**Sampson Staff**

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Banking/Financial  
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\$20K-\$30K  
Ring Joanne Stone  
01-278-6426 (day)  
0865-773839  
(eves/weekends)

## Network Support Assistant

Salary £4,500-£6,000 p.a.

GRIP is the Computer Management Subsidiary of the Grand Metropolitan Group. Due to the increased use of Distributed Processing within the GROUP we are currently expanding our Network Control Function. Reporting to our Network Controller, the Network Support Assistant will be specifically responsible for the following areas:-

#### Day-to-day control of the network

#### Liaison with network users and bureau staff

#### Identification and reporting of all network malfunctions

We expect that the successful applicant will have had several years' practical experience of data communications. Specific knowledge of networks, Post Office Equipment and telecommunications theory would be an added advantage. Please telephone or write to: Miss P. Donoghue, Personnel & Training Officer, Grandmet Information Processing Ltd., Wyvern Way, Rockingham Rd., Uxbridge, Middx. UB8 2UD. Tel: Uxbridge 83111

**GRIP**  
the computer power behind Grand Met.

*McDowell, Knaggs*

### SYSTEMS AND PROGRAMMING

Salary Range £5000-£6250 plus relocation

#### The Companies

A number of Companies having the common interests of commercial workloads (including financial, production and marketing) running on both ICL & IBM configurations, would like to attract people to join them at their WORCESTERSHIRE, GLOUCESTERSHIRE and W. MIDLANDS locations.

#### The Jobs

Apart from current systems and programming assignments there is a requirement to specify, design, program, test and implement new, largely communications based, systems. In certain cases this includes the installation of new equipment including ICL 2900 and IBM 303X.

#### Qualifications

A knowledge of Systems or Programming using at least one of ICL 1800, IBM 380/370, comms, PL1 and COBOL. A prime requirement is the right attitude to adapt and learn in a new environment.

**Applications**  
Will be treated in strictest confidence and should be made directly to DON KNAGGS on WORCS 427077 (BEWPLEY 400038) after 7 p.m. & w/e), or in writing to THE MOUNT, 1 ST JOHN'S, WORCS.

### UNIVERSITY OF ST. ANDREWS QUAESTOR AND FACTOR'S DEPARTMENT

Applications are invited for the post of

### ASSISTANT QUAESTOR

In the Finance Department of the University. Salary scale (under review) £7,227 to £8,992 per annum with pension according to age, experience and qualifications. Excellent superannuation benefits are provided.

In addition to undertaking certain accounting functions the successful candidate will be expected to take responsibility for future development of financial systems. The department uses a ICL 2900 computer with other users and programming is carried out by a separate unit Computer Unit.

Applicants should therefore hold a recognised accounting qualification, have a thorough understanding of computer methods and have some experience of development systems.

Applicants, together with the names and addresses of two referees, should send their applications to: The Quaestor and Factor's Department, St. Andrews by 13.00 on Monday, 18th June 1979.

### CITY AND GUILDS OF LONDON INSTITUTE

### ANALYST/PROGRAMMER PROGRAMMERS (2)

SALARY UP TO £6000

SALARY UP TO £6000

The Institute is currently at the systems investigation stage for a new main examinations system (to be run on a bureau based IBM 303X under OS/VS), and an Analyst/Programmer and two Programmers are required to join existing staff working on this and other systems. The Analyst/Programmer should have at least 2 years' IBM COBOL programming experience and at least 1 year's systems analysis. The Programmer posts require at least 18 months' IBM COBOL experience.

We offer an on-going training plan, and there may be opportunities for programmers to move into systems analysis and design or into systems programming. Other systems are being developed using in-house PDP 11/84 under REXX/11M and there may be an opportunity to move into the team programming in BASIC/COBOL/MACRO/II.

We provide a friendly, relaxed atmosphere and pleasant conditions. Benefits include: Generously subsidised restaurant; Free tea and coffee; On-call payments (where applicable); Flexibility of working hours; 18 days (4 1/2 weeks) leave - pro rata; 1st year of service; 60% BUPA scheme; 1st class pension scheme.

If you would like any further information, please contact: 01-278-2408. Application forms may be obtained from the Department, 49 Bankside Street, London EC1R 9BJ.

# MIDLANDS/WEST COUNTRY

## D.P. Recruitment Specialists

### MANAGEMENT, PROJECT LEADER, SYSTEMS ANALYSTS

**PROJECT LEADER** At least 5 years' experience of D.P. systems to lead project team reporting to the Project Manager. Experience with at least 10% software package and data processing using IBM Hardware Area Birmingham A salary to £6,000 Ref. P424

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**SYSTEMS ANALYST** At least 3 years' experience of D.P. systems to lead project team reporting to the Project Manager. Experience with at least 10% software package and data processing using IBM Hardware Area Birmingham A salary to £6,000 Ref. P424

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### ANALYST/PROGRAMMERS AND PROGRAMMERS

**CHIEF SOFTWARE, PROGRAMMER** To lead small team in support area. At least 5 years' experience of IBM or Univac Assembler and Cobol. Area Coventry Salary to £6,000 Ref. P424

**SENIOR PROGRAMMER/ANALYST** At least 3 years' experience of IBM or Univac Assembler and Cobol. Area West Bromwich. Salary to £6,000 Ref. P424

**SOFTWARE ENGINEER** Micro/Mini computers — some experience in Assembler programming. Area Nottingham. Salary Negotiable. Ref. P423

**PROGRAMMER** 1 year plus any commercial language and experience. Area Derbyshire. Salary to £4,600 Ref. P417

**SENIOR PROGRAMMING/ANALYST** At least 3 years' in D.P. to include working knowledge of Cobol MVS and JCL. Area Birmingham. Salary to £6,000 Ref. P424

**PROGRAMMER** 2 years' plus Cobol and Assembler. Area Stafford. Salary to £5,000 Ref. P422

**SUPPORT PROGRAMMER** Required by Mini and Mainframe Manufacturer for Pre and Post Sales Support. At least 18 months' Cobol. Area Birmingham. Salary to £6,000 Ref. P419

**SENIOR PROGRAMMER** To lead programming team. At least 3 years' ICL Cobol with the Line experience. Area Wiltshire. Salary to £8,500 Ref. P432

**ANALYST/PROGRAMMER** At least 1 year programming in PL/I to join small Development Team. Area Stalls. Salary Neg. Ref. P430

**SUPPORT PROGRAMMER** At least 18 months programming in RPGII or Assembler Mainframe Manufacturer. Area Nottinghamshire. Salary to £8,000 plus expenses. Ref. P421

**PROGRAMMER** At least 1 year experience in Cobol or Plan Area Gloucestershire. Salary to £6,500 Ref. P418

**TECHNICAL SUPPORT PROGRAMMER** Around 2 years programming in PL/I Cobol or Plan Area Wiltshire. Salary to £5,000 plus low interest mortgage. Ref. P434

**APPLICATIONS PROGRAMMER** At least 2 years' Cobol, knowledge of IBM CP, R1 predicted Area Somerset. Salary to £5,500-£7,000 Ref. P452

### D.P. OPERATIONS

**SHIFT LEADER/SENIOR OPERATOR** For IBM 370 under DOS/VS. At least 5 years in D.P. with a minimum of 2 1/2 years operating under DOS/VS. Age range 25-35 years. Area Birmingham. Salary to £5,500 Ref. P456

**COMPUTER OPERATOR** At least 9 months operating IBM System 3 Days only. Area Birmingham. Salary to £4,000 Ref. P433

**COMPUTER OPERATOR** At least 18 months operating IBM or Univac Hardware. Area Coventry. Salary to £4,000 Ref. P450

**COMPUTER OPERATOR** At least 2 years operating experience including experience on IBM System 34 Days only. Area Bristol. Salary to £5,000 Ref. P472

**GRADUATES** Are you a graduate this year? If so, we have a number of clients who are recruiting Graduate Programmers and Analysts for the Midlands area. Salary range: £3,200-£4,800.

If you do not see the position you require above, please contact us, as we have several more on our register.

**Contact: Graham Aston, M.E.C.I.**

**MARTINS COMPUTER SERVICES**

First Floor, Western House, Opposite Albany Hotel, Smallbrook Queensway, Birmingham B5 4HO, telephone 021-643 2111. 24-hour answering service. Evenings and weekends 021-454



# MYRIAD

## INTERNATIONAL PRODUCT CONSULTANTS

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Four outstanding persons are required to form a new department within a leading, multi-national organisation based in S.W. London. Operating as an integral unit, the persons appointed will be responsible for implementing a five year strategic and operational plan for the development and expansion of major computing facilities in the four business areas specified above. Each Consultant will specialise in one of these areas to establish and advise marketing/sales teams throughout the world, ensuring efficient policies are being pursued. They will possess a comprehensive knowledge of potential applications areas in order to identify and exploit future markets to which modern computer technology can most effectively be applied.

Candidates should offer

- \* IN-DEPTH EXPERIENCE OF ONE BUSINESS AREA
- \* ENTHUSIASM, CONFIDENCE AND MATURITY
- \* COMPUTER SYSTEMS BACKGROUND
- \* THE ABILITY TO COMMUNICATE EFFECTIVELY WITH SENIOR MANAGEMENT

The Company is able to offer exciting career opportunities in a very rewarding environment, coupled with the security of a major U.K. organisation. Salaries are negotiable and will not be a problem for applicants with the required skills.

REF: S2/1406

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01-353 0981 24 HRS.

### SYSTEMS PROGRAMMER

TO £7,500 PLUS BENEFITS  
SOUTHAMPTON AREA

A well-established Southampton Company have a vacancy for a Systems Programmer.

The successful applicant will have a background in Assembly code and/or Fortran programming.

He/she will be required to develop scientific systems software for the company's range of minicomputers.

Experience on Digital RT-11 and/or RSX-11-M is an advantage.

The position offered is permanent with various fringe benefits.

Please apply in writing to:

BOX 1032/Computer Weekly

### COMPUTER SYSTEMS OFFICER

Salary Scale £6,522 - £7,422 (under review)

The Housing Department has completed an initial survey of requirements for computer facilities in the next 5 to 10 years.

The Department wishes to appoint to this newly created post a person well-qualified by training and experience in the development and application of computerised systems. Experience of local authority housing work, whilst not essential, would be an advantage, as would a knowledge of organisation and methods techniques. The person appointed is likely to have had at least 5 years' experience in positions of responsibility.

Initially, the main function of the job will be to investigate and analyse in detail the departmental requirements and to prepare a system development plan.

Thereafter, the Computer Systems Officer will be responsible for the co-ordination of systems development and implementation undertaken jointly by the systems team comprising Housing Department staff and computer specialists of the Lothian Region's Computer Division or other agencies.

Considerable participation will be required in systems work, monitoring of progress of each project, preparation of documentation, implementation and general control of the standards of work undertaken for the five major divisions of the department.

Application forms and further details available from the Director of Housing, 23/25 Waterloo Place.



City of Edinburgh  
District Council

### EUROPEAN HEADQUARTERS IN BRUSSELS — BELGIUM OF A LARGE AMERICAN COMPANY HAVE OPENINGS FOR SOFTWARE AND APPLICATIONS PROGRAMMERS (MALE OR FEMALE)

The applicant should have an IBM 370 OS or equivalent machine experience as part of his (or her) computer background.

For Software Programmers:

Experience with IBM System Control Programs OS/VS1 and/or MVS and programming skills in assembler is required. PL/1 language or IMS — DB/DC would be preferred.

For Applications Programmers:

Experience with the PL/1 programming language, and JCL would be preferred.

A university degree would be an advantage, although not a requirement.

The successful candidates will be part of an aggressive multi-national team which utilises advanced Data Base and Online technology on an IBM 3031 OS/VS machine supporting the Company's operations throughout Europe.

Offices are located in pleasant surroundings, in South Brussels, close to train, tram and bus routes.

Please send a résumé of prior experience, educational background and salary requirements to Box 1036, Computer Weekly.

### TWO SHIFTS — W1 OPERATOR

with min. 12 months sound IBM 370 DOS experience. Excellent salary and conditions.

TELEPHONE:  
CAROL McGOVERN  
NOW  
ON 01-828 8776

### FORTRAN

#### ENGINEERING SCIENTIFIC BACKGROUND

CONTACT US. THE SPECIALISTS IN THESE FIELDS

We urgently require Programmers with experience of Fortran, Assembly, Cobol or Basic for Real-Time Applications.

Jobs from £3,600 to £8,000 in all areas. Phone now for list of vacancies.

Capital Appointments, 28 Windmill Street, London W1P 9LH. Tel: 01-477 8883 (even) 01-477 1511 (day)

## Systems and Programming Consultants

£4,500 to £10,000

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- Profit Share
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- BUPA family cover
- Holidays 21 to 26 days
- Assistance with relocation expenses

If you would like to know more, then come along for an informal chat on Tuesday 19th Wednesday 20th June, 1979, between 4 o'clock and 8 o'clock at either:

SKINDLES HOTEL (Curzon Suite) MAIDENHEAD CMG (MIDDLESEX) LIMITED'S OFFICES IN GREENFORD

If you cannot make it, please telephone or write, quoting Ref: M11 to:

Shelagh Tills,  
CMG (Middlesex) Ltd.,  
Westway House,  
320 Ruislip Road East,  
GREENFORD UB6 9BW.  
Tel. 01-578 4568.



## Be there at the Beginning!

### PROGRAMMING TEAM LEADER SYSTEMS PROGRAMMER SYSTEMS ANALYST

We are leaders in the fast growing world of business information. Computers are vital to our continuing world leadership in this field. As a precursor to more powerful equipment, we are installing an IBM 370/45 this autumn.

The initial workload will be:

- Developing and updating a unique file of information on 200,000 U.K. businesses. This file is used to supply specialised services to clients.
- Implementing systems for specific applications in the advertising and marketing industry in the U.K. and Europe.
- Developing a database for production of financial status reports on U.K. businesses.
- Producing a wide range of business publications.
- Providing a wide range of supporting services to our group of companies in the U.K. and Europe.

We need the following key people from the beginning:  
Programming Team Leader to build and lead a productive team of programmers. Applications programmes will be written principally in COBOL, with the occasional use of Assembler and FORTRAN. Applicants should have at least five years' experience and have spent some time in a supervisory role.

Systems Programmer with three or more years' experience of DOS/VS on the 370 series. Communications software and especially CICS experience would be an advantage.

Systems Analyst with three or more years' experience, preferably with a large information system, perhaps in the financial sector. Experience with COBOL is desirable, as is a working knowledge of telecommunications.

Competitive salaries are offered along with a wide range of benefits which include a profit-sharing bonus, contributory pension scheme, four weeks' holiday, lunch vouchers and a thriving social club.

If you are interested in discussing any of these positions, please contact:

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## THE SALES AND MARKETING BIT

### Spotting tomorrow's failures and successes

IN the context of territory management it is as important to be aware of the source of tomorrow's new business prospects as that of today's. It is therefore essential that the salesmen has a complete awareness of the significant areas of decline and growth within the companies and markets throughout his territory.

Of course it's tempting to "do a Micawber" and wait for sales prospects to turn up. It's easy to sit around the office moaning about the company's lack of promotional activity or the need for a direct mailing campaign. However, the salesmen can do a lot for himself when it comes to spotting tomorrow's probable winners and losers in the business world.

This is an essential activity because in this way the salesmen can identify new prospects which might be less obvious to his competitors. It can also help him to take early action to protect his company's interests where bankruptcy and liquidation might be on the horizon among existing clients.

Spotting potential winners and losers in the business world can be a complex process which even "City experts" are unable to perform with absolute consistency.

However, there are some tell-tale signs which can be a pointer to future performance. The well-informed territorial salesmen is a conscientious reader of the national and particularly local business press. This way he gets to know about many of the companies which are enjoying success and suffering failure.

By identifying companies whose apparent growth, dynamism and success is the product of strong and aware management, the salesmen can often locate new prospects which would never appear in the usual trade directories and thus be less likely to involve intense competitive activity.

It is a good discipline to keep a prospect file of local companies declaring sales achievements, market prospects, financial reports, etc. This can become a good pointer to present and future potential in terms of business trends and an awareness of significant growth and decline situations. In both circumstances the implications can be significant with much to lose or much to gain, and a little well-informed foresight can enable the salesmen to exploit either situation to his advantage.

The well informed salesman is one who knows where new business opportunities are most likely to occur. Unfortunately he cannot rely on the 1974 edition of Kompass to tell him all he needs to do to be in the right place at the right time.

Spotting declining companies is a very difficult process. There are two approaches that can be used. One is to monitor

contrived "early warning system." particularly relevant to existing clients, which could indicate a decline that might be so slight as to be apparently irrelevant, but worth identifying nonetheless. Simply attempt to discover what proportion of the company's revenue actually comes from completely new customers and/or new product developments. If the proportion is in single figures or less than the current rate of inflation, the company is potentially stagnant with survival probably dependent on its revenue "fly-wheel" and thus increasingly at risk to competition. The other and more positive approach is to take out formal credit ratings and obtain copies of annual reports regarding existing and potential prospects. There are several sources for gaining this type of information ranging from Companies House to Dun and Bradstreet. The salesman should pay particular attention to such details as turnover and rate of growth; value of order book; stock levels; total of outstanding debt; total of outstanding credit; days' credit given by creditors; days' credit taken by debtors; tax liabilities; and outstanding borrowings.

If the salesman can also discover the proportion of capacity utilised and investment in new products and innovation, so much the better. An amalgam of all this information can give a good "gut feeling" for the company's future prospects.

### TRADER

### Calculators explained

A BOOKLET exploring the argument of the various calculator logic systems available in advanced calculators is available free of charge from Hewlett-Packard. The booklet will interest instructors who are involved in teaching calculator usage, or assisting students to gain the most from their calculators. Copies may be had from Hewlett-Packard at King Street Lane, Wetherham, Wokingham, Berkshire RG11 5AR.

### ARC brochure

A BROCHURE on the protocol and diagnostic testing of the IBM Series 370 and Telepathy Datapad 40/4 terminals is available from Atlantic Research Corp. It describes the capabilities of the ARC Inter-shake test system and is available free from Atlantic Research at 5390 Cherokee Avenue, Alexandria, Virginia 22314 USA.

### Puzzle Answer

THW two sums are 158 & 23

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You should be a successful analyst in your mid to late 20s with around 3 years experience in the design of commercial systems and a broad overall knowledge of computer applications. You will have the ability to work on your own initiative and accept responsibility for dealing with user line management.

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Annual Review from July 1st

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THE POLYTECHNIC, HUDDERSFIELD  
Department of Computer Studies and Mathematics

## PRINCIPAL LECTURER COMPUTING

Ref: ACA 302/A

The principal degree and diploma courses within the Department involve major studies of applications of computers in business, industry and public administration.

Applicants should have appropriate academic and practical experience to promote and lead applied studies in systems and applications, software relevant to these courses, and a good Honours Degree and/or MBA in the field.

## SENIOR LECTURER OR LECTURER II

COMPUTING / INFORMATION SYSTEMS

Ref: ACA 306/A

The principal degree and diploma courses within the Department involve major studies of applications of computers in business, industry and public administration.

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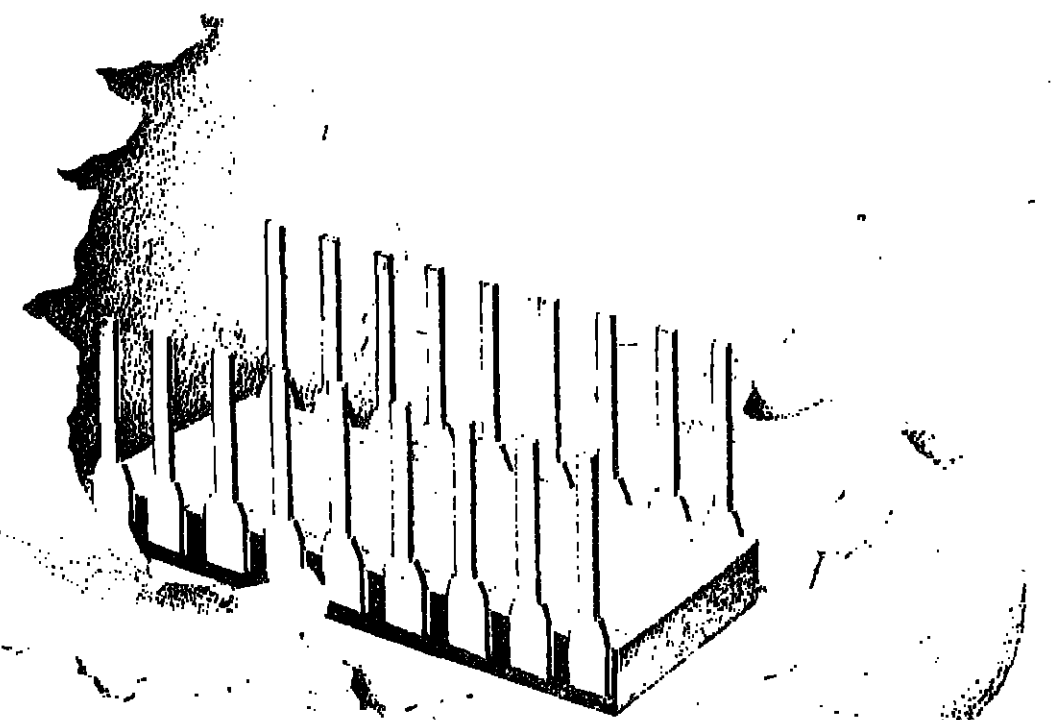
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The Job

The Candidate

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